PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

November 7, 1958

PLAN '59 is a program of McGraw-Hill and its publications aimed at helping U.S. industry prepare for the future. Petroleum Week's contribution:

What oil men will need to meet demand and beat competition....p 35

1956 **$5.5-billion**
1957 **$5.8-billion**
1958 **$5.2-billion**
1959 **$5.4-billion**
1960 **$5.4-billion**

Oil's capital spending heads up again 15

- **Borden Commission's report stirs up a lot of protest in oil circles 18**
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Price 50 Cents

Modernize now for growth and profits

'59 PLAN

A SPECIAL REPORT FROM McGRAW-HILL TO AMERICA'S BUSINESS EXECUTIVES

STEVENS RICE
UNIV MICROFILMS
313 NORTH 1 ST
ANN ARBOR MICH

Dowell can "see" the solution to your problem

Frac fluid magnified 10,500X by Dowell's Electron Microscope.

Ordinary chemical and physical analyses do not always disclose why fracturing fluids with similar viscosities differ so widely in sand-carrying capacities.

Dowell, in its never-ending attempt to probe beyond the ordinary, has equipped its research laboratory with an Electron Microscope, enabling its scientists to *see* the solution to this problem and many more.

A study of Electron Micrographs, such as the one above, helps Dowell to recommend the right frac fluid for your well—the fluid that puts more sand into the fractures of your formation.

"Research" is not lip service at Dowell. It's a full time job, making its business the scientific examination of every detail of fracturing, acidizing and cementing. Careful attention to such details—plus the exclusive remote-controlled Allison Pumpers and the widest selection of well treating chemicals—add up to the big difference you get when you call Dowell. Dowell, Tulsa 1, Oklahoma.

Services for the oil industry DOWELL

A SERVICE DIVISION OF THE DOW CHEMICAL COMPANY

Through the Fall–more Magic Circle ads by Ethyl

Drive-more campaign continues—to promote extra gasoline business during slack sales season.

Now is the time of year when motorists tend to forget about taking those extra pleasure trips that mean bonus gallonage at the pumps. They need to be reminded of the special motoring fun that belongs to the season, and of year-round places to go and things to see.

And that's what Ethyl's current Magic Circle advertisements are doing.

A full-color, full-page ad will be seen by millions of car owners in the November issues of LIFE, LOOK, SATURDAY EVENING POST and SUNSET magazines. Other Ethyl ads appeared in September and October, for a total of over *50 million Magic Circle messages this Fall.*

Newspaper readers are reminded of the fun of Fall driving by the Magic Circle Travel Clinic, an Ethyl public service feature appearing in daily newspapers all over the country.

It's all part of Ethyl's market-expansion effort—a continuing service to the Oil Industry now in its fourth year.

Ethyl Corporation New York 17, N. Y.

Pick out the sulfonate from

BRYTON'S *complete line*

Yes! The choice is yours. But wait . . . can we help you decide which sulfonate to use? Tell us of your specific need. We'd like to help.

PRODUCT		MOLECULAR WEIGHT	% SULFONATE
Sodium Sulfonates	Bryton® Sherosope F-430	430	62
	Bryton Sherosope F-445	445	62
	Bryton Sherosope F	465	62
	Bryton Sherosope T	500	62
	Bryton BOSS® 470	460	70
Barium Sulfonates	Bryton Hybase® Barium Sulfonate 65 Base No.	1010	47
	Bryton Barium Sulfonate 30-N 2 Base No.	1010	30
Calcium Sulfonates	Bryton Calcium Sulfonate 30-A	900	30
	Bryton Calcium Sulfonate 45	900	45
Ashless Sulfonates	Ammonium Sulfonate	450	35
	Amine Sulfonates	490 minimum	50

For additional information, write:
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BRYTON SULFONATES
Specific Sulfonates for Industry

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NATIONAL PETROLEUM NEWS PLATT'S OILGRAM NEWS AND PRICE SERVICE

A McGRAW PUBLICATION

PETROLEUM WEEK **November 7, 1958**

Number of copies of this issue printed: 51,317 **Vol. 7, No. 19**

Published weekly by McGraw-Hill Publishing Co., Inc. James H. McGraw (1860-1948), founder. Publication office: 871 N. Franklin St., Chicago 10, Ill. See panel below for directions regarding subscriptions or change of address.

Executive, Editorial, Circulation and Advertising offices: 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. Officers of the Publications Division: Nelson L. Bond, President; Harry L. Waddell, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator.

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Subscriptions: Address subscription correspondence and change of address to Fulfillment Manager, Petroleum Week, 330 W. 42nd St., New York 36, N. Y. On address changes, please give old and new address and zone numbers, if any, and enclose an address label from a recent issue if possible. Please allow one month for change to become effective.

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"USING FORD HEAVIES HAS MADE A BIG CUT IN OUR MAINTENANCE COSTS"

says Allen Grosse
Fleet Supervisor
Green Bay Box Company

Handling heavy loads with ease, this Ford C-1000 used by the Green Bay Paper and Pulp Company (an affiliate of the Green Bay Box Co.) grosses 60,000 lb. It is equipped with 260-hp 477-cu. in. Super Duty V-8, Extra Heavy Duty 5-Speed transmission and 6.50 to 1 rear axle ratio.

GO FORD-WARD for Savings, Style and Stamina!

Whatever your job . . . wherever you do it—you'll find Ford Heavies and Extra Heavies are engineered and built to do it better! And the '59 improvements in these models will bring still more benefits to your operation.

Greater operating economy with new, faster rear axle ratios and wide choice of transmissions.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

Higher payloads and longer life with new, higher-capacity front and rear axle options.

Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

Yes, the new '59 Ford trucks are here to take you *Ford*-ward for savings, *Ford*-ward for modern style and stamina. See your Ford Dealer today!

"Our records show that our average monthly parts cost, including major overhauls, has been reduced over 24%.

"Our Fords have given us less trouble than any other make of truck we've owned! Also, our Ford Dealer has always given us immediate and very good service. We've never had any downtime waiting for parts. They're always available at our Ford Dealer's, so we don't have the problem or expense of carrying a big parts inventory.

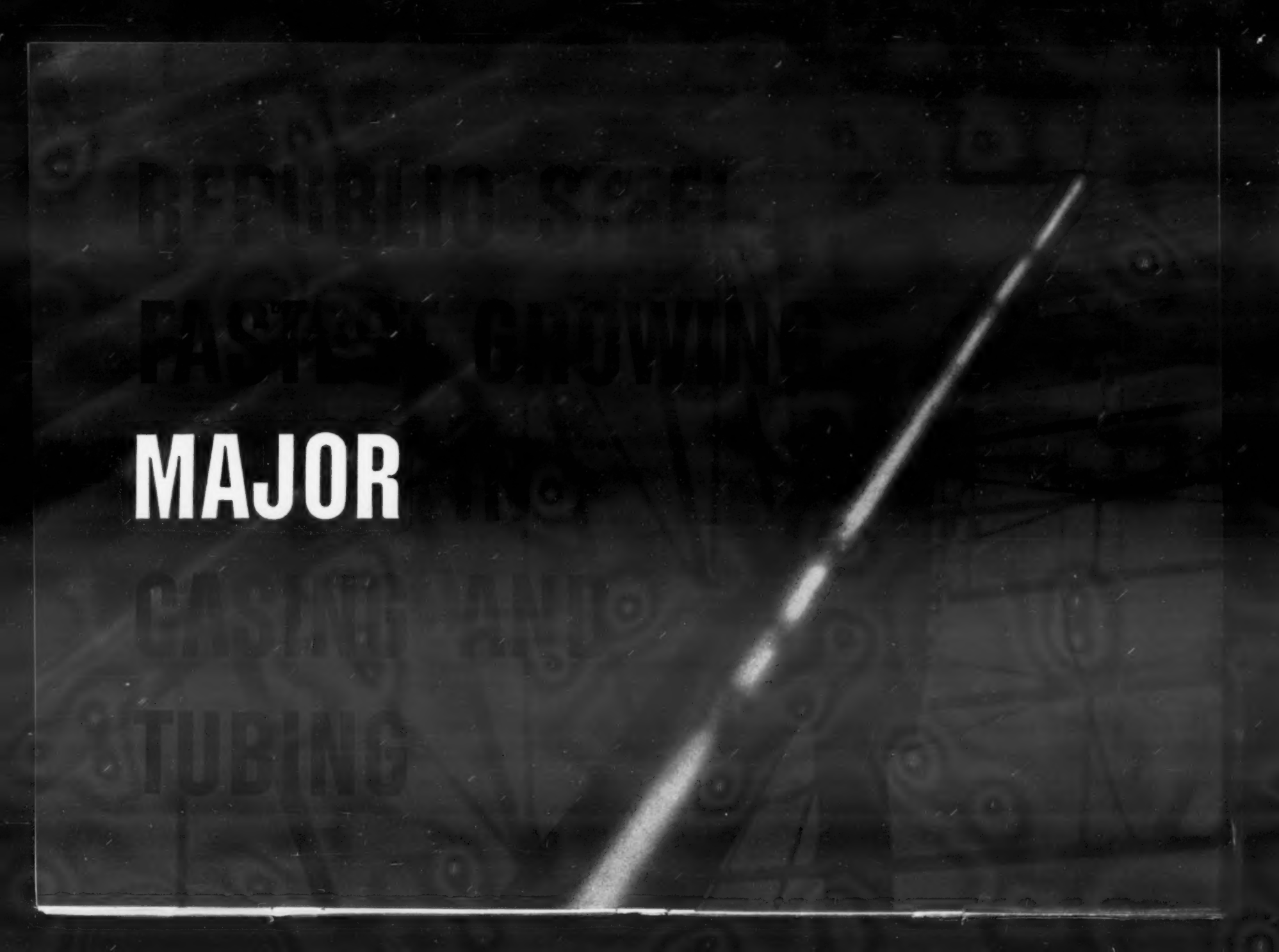
"Our drivers sure like the 'hillability' of the big Ford Tilts with their Super Duty V-8 engines! They say the 'Big V' has sure got it for power that seems to level out the steepest hills. And the Tilt Cabs are tops for maneuverability and riding ease.

"Performance plus economy . . . that's why we're sold on Ford trucks. We started using Fords when we opened our trucking department in 1954, and today 28 of our 35 trucks are Fords."

New Styleside pickups! Notice the handsome new grille, dual headlights, stronger wrap-around bumper. 6½-, 8- and 9-ft. boxes available in Styleside or Flareside models. Short Stroke Six or V-8 engines.

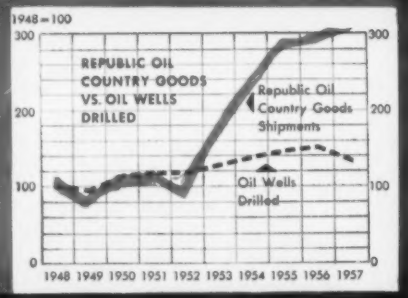
FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!


MAJOR

Republic is in this business all the way! Staffed with people who know the oil industry as well as they know steel. Backed by a half-century of experience in making top-quality tubular goods. Pioneer of the electric weld process. Now operating the most modern seamless mill. With a reputation for product uniformity and dependability that's unsurpassed in the industry. Major expansion program recently completed assures you that Republic brand tubular goods will always be in strong supply.

To meet your needs for oil country tubular goods, Republic has tripled Casing and Tubing production in the last ten years. Seamless and welded. H-40, J-55, N-80. On-schedule delivery from strategically located field stocks. Specify "Republic".



REPUBLIC STEEL

SUPPLY BOVAIRD COMPANY

Strategically Located

STORES STOCKS SERVICES

TO GET WHAT YOU WANT
WHERE YOU WANT IT
WHEN YOU NEED IT . . .
AT REASONABLE
COMPETITIVE PRICES

"Buy From Bovaird"

THE Bovaird SUPPLY COMPANY

GENERAL OFFICES
TULSA, OKLAHOMA

47 YEARS OF PROGRESS WITH THE OIL INDUSTRY

PESA

60-Second Summary / WHAT'S HAPPENING IN OIL

AT-A-GLANCE PETROLEUM WEEK Copyright

November 7, 1958

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Capital spending to find new reserves will increase 10% in 1959, to more than $4-billion. But other branches of the industry plan a cut in capital outlays because of surplus capacities. . . . p. 15

•

Red China is making some fantastic oil claims, including a story about a wildcat flowing 7-million b/d. One reason for the claims: to stimulate Chinese production and thereby reduce the burden of imports from Russia. . . . p. 106

•

Is oil losing friends, even among other businesses? U. S. Sen. Lyndon Johnson thinks so, and blames it on oil's tendency to play a lone role. . . . p. 17

•

Diamond bits have passed a tough deep-drilling test. Shell used the bits for the last 3,700 ft. of its No. 5 Rumberger, Oklahoma's deepest hole. Results: Fewer round trips, and a high average penetration rate. . . . p. 27

•

The third quarter was the most profitable of the year for oil. But nine-month earnings lag well behind 1957 for most firms, though the outlook for the rest of 1958 is improved. . . . p. 16

•

Canadian oil men fear they may be headed toward tight government control if the Borden Commission report is adopted. It recommends licensing of oil and gas exports and imports and strict federal control of pipelines. . . . p. 18

•

The Sinclair-British Petroleum deal is likely to create sharp competitive situations, particularly in the U. S. crude import market. Although it will be years before the full impact will develop, some effects will be felt soon. . . . p. 19

PLAN '59

Modernization is getting No. 1 priority in oil planning for next year. Reasons, shown by an industrywide Petroleum Week survey: (1) Today's overcapacity is tending to brake expansion, while (2) leaner profits are spurring emphasis on higher quality and lower costs. . . . p. 35

The octane race isn't over—at least not in gasoline ads. The sales pitches being used in the fall marketing campaigns are featuring high-octane claims. . . . p. 112

•

Gas pipeline firms are swinging to automatic stations. Texas Eastern, for instance, is readying its first mainline remote-controlled station, and plans four more. . . . p. 88

Up to the Minute / SIGNIFICANT LATE NEWS

November 7, 1958

Congressional election results portend a depletion fight in '59. Sens. William Proxmire (D., Wis.) and John Williams (R., Del.), leaders of the Senate antidepletion bloc, were reelected. Of 31 senators who voted for a graduated reduction of depletion, only three were defeated, and their replacements are expected to join the antidepletion group. Of the senators who voted to maintain the 27.5% level, about a dozen will not return. Proxmire-Williams forces hope to pick up four or five votes from their replacements.

Hopes for a natural gas bill, already dim, grew dimmer Tuesday. Both the House and Senate will take on a more "liberal" flavor, which probably means that oil will have even tougher sledding in Washington.

The election outcome probably won't affect the imports program, however. It will continue to be largely an administrative problem.

•

FPC has left the door open for new applications to supply gas to Midwest markets (page 18), and Tennessee Gas Transmission has already filed a revised plan.

•

Argentina this week signed an agreement with Russia for $100-million in credits for oil equipment purchases. Orders for $30-million of equipment have been placed, Petroleum Week was told in Moscow by Jose B. Liceaga, head of the Argentina mission that made the deal. Included are: turbodrills, perforators, seismic instruments, and pipeline and production equipment. The remaining credit is to be used within eight months.

This may limit the opportunity for similar deals by U. S. firms. The Soviet agreement, according to Liceaga, represents "the best conditions Argentina has ever obtained anywhere." Repayment is to be made in Argentina goods within ten years at 2.5% interest.

•

Oklahoma sweet crude now is posted at five levels. At mid-week Magnolia and Sinclair added two schedules to those already in effect (page 20). Both cut 10¢ to a top of $3.05, but Sinclair added penalties to middle and low gravities.

•

TIPRO is going to appeal to the Tariff Commission again. Rejected once on the grounds that product imports don't directly affect producers (page 20), TIPRO is filing an amended petition in an effort to get the commission to act.

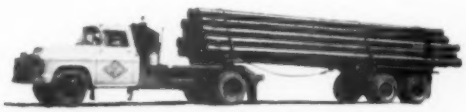
•

The next round in Louisiana's natural gas tax battle will be fought in the legislature. Gov. Earl Long was planning at midweek to call a special session to consider a switch from the present gas gathering tax to a severance tax. The reason: to avoid a challenge of the constitutionality of the gathering tax, which gas firms are now paying under protest, and to avoid having state revenues tied up in a court battle.

Congrats and $25 to Mr. D. J. SUGGS, Republic Natural Gas Co., Tipton Bldg., Pauls Valley, Okla., for this quip.

Joe Roughneck is top kick of the industry . . and plenty tough in his pipe demands. He likes the plus factors he gets in using Lone Star electric weld pipe: convenient source of dependable supply, overnight delivery and rigid quality control through exacting multiple tests.

Sound, strong, lasting pipe you can depend upon: API casing, tubing and line pipe from Lone Star.



Neighbor, wherever you are, specify Lone Star and we both get a good deal.

Lone Star STEEL COMPANY

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Soda Ash—Sodium Sesquisilicate

(Prices from OPDR 6-16-58)

Soda ash dense, 58%, paper bgs., c.l., works 100 lbs 1.90 —
paper bgs. l.c.l. stock pts 100 lbs 3.00 4.77
bulk c.l. works 100 lbs 1.60 —
Light, 58% paper bgs., c.l., works 100 lbs 1.85 —
paper bgs. l.c.l. stock pts 100 lbs 3.95 4.72
bulk c.l., works 100 lbs 1.35 —
Soda caustic flake 76% dms c.l. works, frt. equald 100 lbs. 5.30 —
Liq. 50% sellers tanks works dry basis 100 lbs 2.80 —
[illegible] tanks works dry basis 100 lbs 2.80 3.00
73%, sellers' tanks, works, dry basis 100 lbs. 3.00 —
Soda, caustic, liq., 73%, rayon type, sellers' tanks, works, dry basis 3.00 - 3.10
Soda, [illegible] works, 100 lbs. 4.80 - —
Soda sal conc. bgs. c.l. works 100 lbs 2.80 —
bgs. smaller lots works 100 lbs 2.80 —
Sodium acetate anhyd. bgs., c.l., divd E lb. 14½ —
bgs., l.c.l. same basis lb. 16½ —
NF, 98% gran. dms. c.l., works lb 15½ —
dms., l.c.l., works lb 17½ —
Sodium alginate, NF white powd. dms. 300 lbs or more lb 80 —
Sodium p-aminosalicylate, dms. 100-lb lots or more, frt adjusted lb 2.76 —
Sodium antimoniate, bgs., c.l., divd. E lb. .25½ —
bgs., l.c.l., divd. E lb. .27 —
Sodium arsenate, 60% arsenic pentoxide, dealers, dms., ton or more, works lb. .26 —
dms., less than ton lots, works lb. .28½ —
Sodium arsenite 90% pink powder 75% arsenious oxide, dealers, dms., ton lots or more, works. lb. .17½ —
dms., less than ton lots, works. lb. .18 - .19
Sodium ascorbate dms. 25-50 kilo lots kilo 10 00 —
dms., 10-kilo lots kilo 10 35 —
dms., 5-kilo lots kilo 10 75 —
dms., 1-kilo lots kilo 11 00 —
bots. 500-gram bots kilo 11.50 —
Sodium benzoate, tech., c.l. t.l., frt. alld lb .35 —
dms. l.c.l. same basis lb .39 —
USP, c.l., t.l. frt alld lb .38 - —
ton lots same basis lb .43 - —
1,000-lb lots, same basis lb .45 - —
Sodium bicarbonate USP gran. bgs c.l., works 100 lbs 2.95 —
bgs. l.c.l. works 100 lbs 3.85 —
USP, powd., bgs. c.l. works 100 lbs 2.55 —
bgs. l.c.l. works 100 lbs 3.45 —
Sodium bichromate gran. bgs. c.l., t.l. works lb 13 —
bgs. l.c.l. works lb 13½ 14¼
Sodium bifluoride bbls c.l. works, frt equald lb 17½ —
bbls. l.c.l. same basis lb 1990 —
Sodium bisulfate bulk c.l. works 100 lbs 2.00 —
dms. c.l., frt equald 100 lbs 3.00 3.60
dms. l.c.l. frt equald 100 lbs 3.50 4.10
Sodium bisulfite anhyd. bgs., c.l. works 100 lbs 5.00 —
bgs., l.c.l., works 100 lbs. 5.45 - —
Soln., 35° bbls., c.l. works 100 lbs. 1.70 - —
bbls l.c.l. works 100 lbs 2.20 —
Sodium borate (see Borax)
Sodium bromide, USP gran., dms., works lb. .40 —
Sodium carbonate, cryst., monohydrated (see Soda sal)
Sodium carbonate monohydrated, bgs. c.l. works 100 lbs 3.10 —
bgs. l.c.l. works 100 lbs 3.50 —
Sodium carboxymethyl cellulose (see CMC)
Sodium chlorate cryst. 350-lb. dms., c.l. works lb. .09 —
dms. l.c.l. works lb 09½ 10½
Sodium chlorate in 100-lb. dms. only, ½c per lb higher
Sodium chloride (tech (see Salt)
Sodium chloride USP gran. bgs lb .05 —
Sodium chlorite tech dms. c.l. works lb. .58 - —
dms., 20-dm. lots or more, works. lb .60 -
dms smaller lots works lb .70 .72
Sodium chloroacetate tech. dms. c.l. works lb .27 —
dms. l.c.l. works lb .28 —
Sodium chromate anhyd. fib dms. c.l. t.l. works lb 14¾ —
fib. dms. l.c.l. works lb 15¼ 16½

Sodium chromate, tetrahydrate, bgs., c.l., t.l., works lb. .1015- —
bgs. l.c.l lb 1065 1180
Sodium citrate anhyd. dms lb 62 —
NF VIII, gran. dms lb 26½ 27½
USP XIV gran dms lb 29½ 30½
Sodium citrate USP powd prices ½c higher
Sodium cyanate dms. 1,000-lb lots, works lb .65 —
dms. smaller lots works lb .90 1.10
Sodium cyanide flake 96-98% dms. c.l or 20,000-lb lots lb .193 —
dms. over 1,000-lb lots lb .203 —
dms 100-lb to 1,000-lb lots lb .213 —
Gran sodium cyanide 1c higher
Sodium diacetate 34-35% acidity 250 lb dms works lb .15 —
250-lb dms l.c.l works lb 15¾ —
Anhyd dms c.l. works lb .16 —
dms. l.c.l works lb 18¾ —
Sodium dimethyl dithiocarbamate, 40% soln., dms., c.l., t.l., frt. alld., 100% basis lb. .42 - —
dms., l.c.l., t.l.l., same basis lb. .47 - .52
tanks, same basis lb. .38 - —
Sodium ferrocyanide bgs. 10-ton lots lb 13½ —
bgs. smaller lots lb 14 —
Sodium fluoride white, 97% fib dms. c.l. works, frt. equald lb 1390 —
fib dms. l.c.l. works, frt. equald lb 1430 —
Sodium formate bgs. c.l. works 100 lbs 7.00 —
bgs. l.c.l. works 100 lbs 8.65 —
Sodium gentisate 100-lb fib dms. lb 5.50 —
Sodium gluconate refd. dms lb .84 —
Tech., dms., bgs. lb. .37 - .39
Sodium hydride powd. dms. works lb 1.90 2.75
Sodium hydrosulfide (see Sodium sulfhydrate)
Sodium hydrosulfite dms. c.l. frt alld lb
dms., l.c.l. frt alld lb
Sodium hydroxide NF pellets 100-lb dms. l to 100-dm lots lb
Sodium hydroxide tech (see Soda caustic)
Sodium hypophosphite NF dms. 1,000-lb. lots lb.
Sodium hyposulfite anhyd. photograde bgs. c.l. works 100 lb
bgs., t.e.l., works 100 lb
Tech., bgs. c.l. works 100 lbs
bgs., l.c.l., works 100 lb
Sodium hyposulfite hexahydrate pea. cryst. bgs., c.l. works 100 lb
bgs. l.c.l. works 100 lb
photo grade bgs. c.l.
bgs. l.c.l. wo
Sodium hyposulf
tech.,
bgs., l.c.l.
Sodium iodide,
Sodium tartate
Sodium (aury)
dms., l.c.l.
tanks divd
Sodium metabis
sulfite)
Sodium metat
gran.
bgs., ton l
bgs., smalle
Sodium metah
bgs.,
bgs., ton lo
bgs., smaller
Sodium metallic.
Fused, 18,000-lb
tanks, works
Sodium metanilate bbls.
Sodium metasilicate anhyd
c.l. works
bgs. 6,000-19,900 lb lots
dms. c.l. works
dms., l.c.l. works
Sodium metasilicate pent.
bgs. c.l works
bgs. l.c.l. works
dms. c.l., works
dms. l.c.l works
Sodium molybdate anh
works t.l.
Cryst. dms works fr
Sodium monoglutamate (s
dium glutamate)
Sodium monohydrate (s
carbonate monohydra

Sodium naphthionate, bbls .. lb .70 - —
Sodium nitrate dom., crude, bgs., c.l. works ton.48.75 - —
bulk, c.l., works ton.45.25 - —
Sodium nitrate, imp., 100-lb. bags., c.l., Atl., Gulf, Pac., whse. ton.49.75 - —
bulk, c.l., same basis ton.46.25 - —
Sodium nitrite USP, bbls., c.l., works frt equald 100 lbs. 9.00 - —
bbls. l.c.l. same basis 100 lbs. 11.00 - —
Sodium orthosilicate conc. dms., c.l., works 100 lbs 6.70 —
dms. t.e.l. works 100 lbs 7.05 7.05
Sodium orthosilicate hydrated, flake, bbls. c.l. works 100 lbs 5.65 - —
bbls. t.e.l. works 100 lbs 7.60 7.90
Sodium oxalate 98% bgs. works 100 lbs. 12.35 —
Sodium para aminobenzoate (see Sodium p-aminobenzoate)
Sodium para aminosalicylate (see Sodium p-aminosalicylate)
Sodium pentachlorophenate, briquets, bgs. c.l. works, frt. equald lb .20 —
bgs. t.e.l. same basis lb 27½ 34
Pellets bgs. c.l., same basis lb 26 —
bgs. t.e.l. same basis lb 27½ 34
Sodium pentachlorophenate, powd., bgs., dms., c.l., same basis lb. .25 - —
bgs dms t.e.l. same basis lb 26½ 33
Sodium pentachlorophenate, 20,000 lbs., min truckloads ¼c per lb over earlier prices
Sodium pentobarbital, USP, dms., 100 lbs. or more lb. 6.00 - —
Sodium perborate NF, tech., bgs., c.l. works lb .10 —
bgs. t.e.l. works lb .21 —
Sodium peroxide dms c.l. t.l. divd E of Miss lb 20½ —
dms t.e.l same basis lb .21 21
Sodium phenobarbital, USP, 100-lb. dms lb. 3.75 - —
Sodium phenolsulfonate, USP IX, gran., dms lb. .50 - .51
NF, powd., dms. lb. .53 - .54
Sodium phosphate, dibasic anhyd., bgs., c.l. frt equald 100 lbs 7.95 —
, t.e.l., same basis 100 lbs. 8.35 - 9.40
duohydrate bgs., c.l., frt equald 100 lbs 4.60 - —
, t.e.l., same basis 100 lbs. 6.10 - —
phosphate, dibasic, USP, dried, powd., bgs., dms., works lb. .19 - .20
phosphate, monobasic, an-, bgs., c.l., frt. equald. 100 lbs. 9.00 - —
, t.e.l., same basis 100 lbs. 9.40 -10.00
phosphate, tribasic, an-, bgs., c.l., frt. equald. 100 lbs. 9.05 - —
bgs. t.e.l. frt equald. 100 lbs 9.45 10.05
cryst., bgs., c.l., t.l., frt. equald. 100 lbs. 4.60 - —
, t.e.l., frt. equald 100 lbs. 5.00 - 5.75
hate in dms. 60c to bgs
see Sodi-
d, bgs., equald. 100 lbs 11.10 —
100 lbs. 11.85 -12.35
dms., ks lb. .36 - —
lb .37 .39
basic, works, 0 lbs 7.81 —
0 lbs. 9.21 - 9.71
,000- lb. .78½ - —
s.lb. .81½ - —
c.l., hs 2.35 —
hs 4.10 4.35
bs. 4.35 - 4.60
s 4.75 4.90
s 5.35 5.60
& of Miss., and Va. Ala., E of 100°; and Vt. in ones. Daven- E of 98° nn Mo (ex- N C., S C., E of 100° (ex- La and Miss Kan., Neb. W W of 100° ing El Paso Nev., N M.,
bgs., 100 lbs. 5.70 - —
100 lbs. 6.20 - —
100 lbs. 5.00 - —
works. 100 lbs 5.33 —
100 lbs. 5.50 - —
works 100 lbs. 5.85 - —

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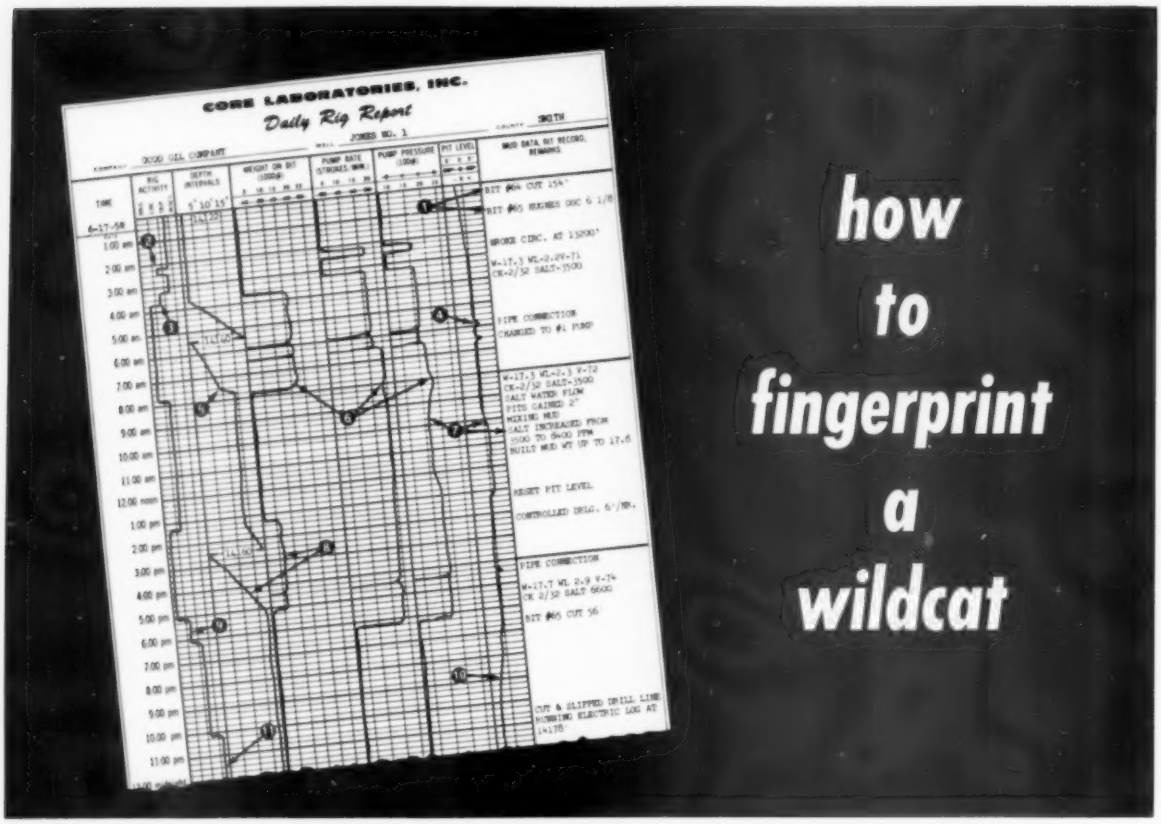

Core Lab's new *Daily Rig Report* is the "hottest" Well Logging Service refinement developed in years.

The source material for this 24-hour, graphical presentation of downhole and surface activity originates at the central instrument panel of Core Lab logging units.

All continuous strip chart recordings and associated information are carefully summarized, accurately plotted, and presented to the operator at the well site. At a glance, he can comprehend 24 hours of rig activity. For example, here's what the Report above reveals about a day in the life of a wildcat —

(1)-Bit record — footage cut by old bit; type and size of new bit. (2)-While making trip back to bottom, crew stopped at 13,200' and broke circulation for 15 minutes. (3)-Circulated and conditioned mud for 30 minutes after getting back on bottom. (4)-Made connection; slight gain in mud suction pit when pumps were off. (5)-7:35 AM; change in slope of depth curve indicated drilling break at 14,149'. (6)-Loss of weight on bit, combined with slight initial reduction in pump rate and initial gain in pump pressure at the time of drilling break, indicated probable high-pressure sand. (7)-Gain in mud level and higher filtrate salinity, combined with delayed loss of pump pressure, indicated definite salt water flow. (8)-Controlled drilling rate of 6 feet per hour, accomplished with only 7,000 pounds weight on bit, indicated drilling was probably still in high-pressure sand. (9)-Circulated and conditioned mud for one hour prior to trip. (10)-Normal loss of mud due to hole fill-up while coming out with drill pipe. (11)-Shut down to change drill line and run electric log, while out of hole at 14,178 feet.

Note: The new Daily Rig Report does not replace Core Lab's traditional Grapholog (hydrocarbon index, lithology, physical characteristics of mud, etc.). To the contrary, it greatly supplements the wealth of information available through Well Logging Service.

CORE LABORATORIES, INC.

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DALLAS FT WORTH HOUSTON MIDLAND ABILENE SAN ANGELO PAMPA AMARILLO MONAHANS LUBBOCK HOBBS CORPUS CHRISTI VICTORIA McALLEN SAN ANTONIO SHREVEPORT TYLER EL DORADO HATTIESBURG JACKSON TULSA OKLAHOMA CITY WICHITA FALLS BARTLESVILLE WICHITA LIBERAL LAFAYETTE NEW ORLEANS DENVER STERLING CRAIG CASPER WORLAND KIMBALL WILLISTON FARMINGTON LOS ANGELES BAKERSFIELD LONG BEACH CALGARY EDMONTON REGINA VENEZUELA S A

Capital Spending to Rise in 1959

	1957 Actual	1958 Estimated	1959 Planned	% Change '58-'59	1960 Planned
	(millions of dollars)				
All Business	$38,437	$32,852	$33,022	+ 0.5%	$32,661
All Manufacturing	13,647	10,009	9,678	— 3.0%	9,655
Petroleum Industry	5,797	5,158	5,442	+ 6.0%	5,439
Electric & Gas Utilities	6,197	6,280	6,103	— 3.0%	5,693
Iron & Steel Industry	1,844	1,199	1,043	—13.0%	1,043
Automotive Industry	1,058	646	672	+ 4.0%	645
Chemical Industry	1,724	1,400	1,288	— 8.0%	1,211

Data for petroleum industry exclude bonus payments for leases and natural gas pipelines. Latter are included with utilities.

Petroleum Industry

	1957 Actual	1958 Estimated	1959 Planned	% Change '58-'59	1960 Planned
	(millions of dollars)				
Drilling & Production	$4,025	$3,703	$4,073	+10%	$4,032
Transportation	423	389	354	— 9%	333
Processing	853	606	588	— 3%	623
Marketing	426	405	369	— 9%	399
Other	70	55	58	+ 5%	52

Business Upturn Is Indicated

Business firms generally are cautiously eyeing 1959 as a year of upturn in the economy—one which calls for some expansion.

A fall check on the preliminary capital spending plans of all business by McGraw-Hill's Economics Dept. shows that the total outlays now set for 1959 will amount to $33-billion, up 0.5% over the estimated 1958 capital outlays for new plants and equipment.

Previous experience indicates, however, that these preliminary spending plans will be revised upward as final budgets are completed. In the fall of 1954, for example, when the economy was recovering from a recession, business estimated capital expenditures for 1955 at 5% under 1954. But by the spring of 1955, business revised its plans upward to spend 5% more than 1954. Final figures for 1955 showed outlays of 7% over 1954.

Manufacturing companies, most of which have considerable spare capacity, now plan to spend 3% less in 1959, even though companies in every manufacturing industry estimate that their 1959 sales will exceed 1958's.

The average increase expected in the physical volume of sales next year is 9%. With increases in prices—a normal expectation during business upturns—the rise in dollar sales would be even greater.

The largest increase in sales (26%) is expected in the iron and steel industry, which had an exceptionally poor first half in 1958. The automobile industry looks for a rise of 20% in sales next year, also following a poor 1958.

Despite the sharp recovery in manufacturing production since last spring, most industries still have a substantial amount of spare capacity. A McGraw-Hill survey found that over-all manufacturing capacity is now 50% greater than in 1950.

The survey indicates that in September, manufacturing companies were operating, on the average, at less than 80% of capacity. Since most firms prefer to run at about 90% of capacity, they tend to hold back on expansion plans when they fall below the 90% rate.

Manufacturers' plans for capital spending in 1960 are

(continued on page 16, col. 1)

Oil Hikes Spending Plans 6%

Capital expenditures for exploration, drilling, and production in 1959, as now planned, will rise 10% over 1958. All other major branches of the petroleum industry plan to trim capital outlays, with the result that over-all spending by oil will rise 6%.

That's based on the preliminary plans of the industry, which now foresees a modest increase in demand next year of about 4.3%, after a two-year period in which demand showed no measurable gain.

And the industry already is looking forward to 1960 as another year of relatively high spending in the search for new reserves of oil and gas, and for new plant and equipment. The contemplated spending for 1960 is already at about the same level as that planned for 1959.

Petroleum's capital-spending plans for the next two years are closely geared to spare capacity. In the divisions of the industry where spare capacity is great—processing, transportation, and marketing—expenditures will decline in 1959 and rise only modestly in 1960, based on present planning.

There will be some growth in capacity in those branches of the industry. But by and large, capital expenditures in those divisions will be for modernization to improve efficiency and to improve product quality (page 35).

The preliminary planning is subject to change—particularly if the estimates of demand growth prove conservative, and demand starts to catch up with capacity.

Petroleum reserves, however, have been affected by the slowdown in demand, and the search for oil will have to be stepped up to meet the growth that is now expected for the immediate future years.

The expectation of an upturn assumes continuation of a governmental program to restrict imports.

The 10% increase to more than $4-billion that is now planned for capital spending in exploration, drilling, and production reflects the outlays that will be required to drill approximately the same number of total holes as expected in 1958—nearly 48,000. The increase will be

(continued on page 16, col. 2)

Business Upturn Is Indicated (Cont.)

already very close to plans for next year. So actual spending in 1960 is almost certain to exceed 1959's. More than half of the industry groups report now that 1960 capital outlays will exceed next year's.

For many, many companies, the existence of spare capacity will not be a deterrent to capital spending. A large portion of manufacturing capacity is obsolete and requires modernization. Less than one-third of the capacity is "modern" in the sense of being new since 1950, and will require replacement.

Oil Hikes Spending Plans 6% (Cont.)

necessary due to higher costs of materials and labor, and a stepup in average footage per well needed to find new reserves.

It is anticipated that the total footage that will have to be drilled in 1959 may approximate 234-million feet drilled in 1956, when a record of more than 58,000 new completions were made.

The new supply requirements now indicated for next year may mean U.S. crude output of 7,160,000 b/d in 1959, up 6.5% over 1958, and close to the 1957 and 1956 levels.

Third-Quarter Profits—Best of '58

Third-quarter profits of most oil companies ran above last year, but the nine months' net income of nearly all firms lagged behind 1957. The margin of lag, however, was less than at mid-year.

A higher level of business activity since June was primarily responsible for the improved third-quarter showing. Another factor influencing third-quarter profit comparisons was the generally low earnings in the 1957 third quarter.

Generally, the third quarter was more profitable than either of the two preceding three-month periods, due to higher crude producing rates, improved product price realizations, and continued beneficial results of cost reduction measures.

For at least one large company—Atlantic Refining Co.—third-quarter profits exceeded those of the entire first six months.

There were a few exceptions to the general trend of nine months' earnings below 1957—but they were due to unusual circumstances.

Standard Oil Co. (Ohio), for example, had a nine-month net 19.9% above last year. But the increase was more than accounted for by a nonrecurring profit from sale of oil and gas royalty interests in producing properties where Sohio did not own a working interest.

The company's sales and operating revenues were 6% under the 1957 nine-month period.

Earnings of Sinclair Venezuelan Oil Co. set a new peak in the first nine months, up 175.8% over 1957. The company's crude production for the period averaged 52,983 b/d, up from 21,439 b/d last year, reflecting completion of a pipeline outlet for its production in Western Venezuela.

The company's first-half profits also were substantially above a year ago.

Nearly all other companies had an extremely poor showing in the first half, due to the comparison of recession-hit profits with those of early 1957, when export volume was unusually large.

	Nine-Month Net Income			
Company	Thousands of Dollars	% Change from 1957	% Change from 1956	Six-Month Net % Change from 1957
Gulf Oil	$204,393	— 26.0	— 4.5	— 42.6
Jersey Standard	462,000	— 30.0	— 23.4	— 37.2
Socony Mobil	115,700	— 33.8	— 36.8	— 46.8
Ohio Oil	23,028	— 28.1	— 24.0	— 32.1
Sun Oil	22,622	— 42.0	— 43.2	— 54.1
Atlantic Refining	19,180	— 34.6	— 41.4	— 69.7
Phillips Petroleum	57,609	— 22.4	— 19.5	— 32.0
Plymouth Oil	2,876	— 49.1	— 51.9	— 65.5
Sinclair Venezuelan	17,002	+175.8	+144.6	+201.2
Continental Oil	33,294	— 5.0	— 14.7	— 14.8
Creole Petroleum	249,018	— 21.9	+ 3.5	— 27.4
Ohio Standard	17,474	+ 19.8	— 13.3	— 9.4
California Standard	187,744	— 11.3	— 1.4	— 14.4
Sunray Mid-Cont.	28,080	— 22.0	— 10.6	— 22.0
Union Oil	20,830	— 24.7	----	— 31.5
Texas Co.	227,693	— 6.3	+ 9.8	— 16.1
Sinclair Oil	35,368	— 40.0	— 46.4	— 44.7

The improved third-quarter earnings prompted a few companies to predict an encouraging profits outlook for the rest of 1958. But some of them noted that recent product price reductions may have an unfavorable effect on fourth-quarter profits.

Oil Leases on Highway Rights-of-Way?

The Texas Highway Commission held a hearing Saturday on the controversial issue of whether it should grant oil leases on highway rights-of-way.

Oil industry spokesmen opposing the leasing urged the commission to delay action at least until the legislature has an opportunity to take action on the problem.

They said there is some question on legality, and pointed out that other "serious problems" would arise unless legislation was enacted to insure "a sensible development program (page 32).

They suggested the need for unitizing the state's interests with adjoining tracts in instances where oil and gas are found.

Two members of the commission said they feel something should be done to collect income due on mineral rights which the state owns.

The problem arose when Tee Tee Oil Co., of Liberty, Tex., told the commission it was interested in leasing some rights-of-way.

Gulf Oil Corp. has received 30,000 requests for reprints of its 'active politics' plan

→ Aside from Gulf, other leaders are urging the industry to be bolder on key issues

Oil Can't Solve Its Problems Alone

No one knows yet—not even Gulf—what the outcome will be of its move into politics. But it has created a stir, and has set people to thinking.

A PETROLEUM WEEK survey found that Gulf's action (PW—Sep.19'58, p110) is one of the most talked-about incidents in the industry, particularly among persons directly concerned with the public's attitude toward oil.

Gulf itself reports that its announcement of a plan to make a continuing study of the actions of public officials has evoked more press reaction and comment than any other single event concerning the firm in recent years.

It already has received 68 letters from presidents, board chairmen, and other corporation executives, in and out of the oil industry. These letters were predominantly favorable, Gulf says, and some suggested the possibility of collective action to further the plan.

Gulf has also received requests for 30,000 reprints of the letter written by Archie D. Gray, its senior vice-president, to Gulf's employees, outlining the company's plan.

Some in the industry, while agreeing in general with Gulf's goal, are not sure the company's approach is a good one.

PETROLEUM WEEK found public relations directors almost equally divided into three categories: (1) those who approve, (2) those who want to await developments, and (3) those who think Gulf made a mistake.

Of those who objected, most either said the action was "premature," or that it would only give oil critics fresh ammunition.

Whether Gulf's move was wise or not, there appears to be a growing awareness of the need to improve the oil industry's standing with the public and with public officials.

Of more than 20 oil public relations directors queried by this magazine, a big majority listed understanding by the public and by legislators as one of oil's gravest needs.

Several noted the advancing threat of utility-type control of oil, and felt it could be forestalled only by convincing the government and the public that such a step would not be in the public's interest.

Most companies appear to be making evolutionary, rather than revolutionary, changes in the public relations approach.

That is, there are few, if any, companies making drastic overhauls of their present public relations approaches. But there are some shifts in emphasis and in direction. A statement by a Pure Oil Co. official is pretty typical:

"There has been a greater determination to tell our story to the publics that are affected by our actions and operations, and an increasing recognition that all our employees need to be informed members of our public relations team."

For the most part, oil public relations men feel that individual company action and industry group action are both needed.

They say that some problems can best be solved by a unified approach—such as through API—while other problems need to be handled on an individual basis.

Some noted that individual action holds the inherent danger of bringing oil disagreements to public attention, but they also pointed out that for a company to wait until all the industry is in total agreement would be a wait of eternity.

Some industry leaders feel that oil has failed to get understanding because it has failed to give understanding to others.

The proponents of this theory say that oil men tend to get too absorbed in their own operations, and thus are not alert to problems and changes elsewhere.

And Charles A. Perlitz, Jr., execu-

'U.S. Oil Needs New Friends'

The oil industry often finds itself standing alone, without friends even in other businesses, U.S. Sen. Lyndon Johnson said last week.

The Texas senator told the Independent Petroleum Assn. of America:

"I know of no other segment of American industry so lacking in other business allies as yours.

"You are more alone than you may believe."

Johnson feels that the oil industry's greatest need is to end this go-it-alone approach.

"You can not do it alone," Johnson told his listeners. "You must carry an understanding of your industry to others, and you must seek open-mindedly an understanding of their problems as well."

Johnson said that oil's failure to do this in the past has caused it to lose support from other industries.

He also charged that the industry has failed to win political support, outside a very narrow regional basis.

He noted that, where oil is concerned, there has been a political stalemate for ten years, and that one reason for this has been oil's failure to win friends.

"You cannot, I say candidly, expect to prevail politically when you do not have the votes to prevail."

He gave this explanation of the "stalemate":

"On one hand, your industry has dedicated much of its effort to complete and total resistance to change of any sort in national policies affecting the industry.

"On the other hand, many of your critics and challengers have been equally dedicated to goals which sometimes amount to nothing more than change for the sake of change."

As a result, he concluded, national policies in regard to oil security have rested on dead center.

tive vice-president of Continental Oil Co., feels that inactivity in national issues has caused industry to lose ground.

"The influence of business leaders in national affairs has been waning," he says, "because businessmen have simply not properly understood the interdependence of business and political matters."

FPC Turns Down Midwest Gas Plans

The Federal Power Commission has denied all major proposals for natural gas service in the Midwest, but is keeping the door open for the future.

In a sweeping action last weekend, FPC ended—for the present, at least—a fight between four large gas pipeline companies to gain an upper hand in the Upper Midwest states.

FPC refused to approve Midwestern Gas Transmission Co.'s plan for a Canada-to-Tennessee pipeline, which would have brought Canadian gas to the U.S.

It was the application by Midwestern, wholly-owned subsidiary of Tennessee Gas Transmission Co., which started the gas controversy three years ago and resulted in 20 applications pending before FPC.

Midwestern was rejected for failure to show a gas supply. Although Midwestern had a contract with Trans-Canada Pipe Lines, Ltd., for 204-million cu. ft. of gas daily, and would have received a like amount from Tennessee Gas, FPC said it was not convinced that Trans-Canada could meet both Canadian and U.S. requirements.

Northern Natural Gas Co. did not adequately prove a feasible storage project, and Michigan Wisconsin Pipeline Co. would not show economic feasibility FPC said.

A batch of other applications, including some by subsidiaries of the fourth major competitor, Natural Gas Pipeline Co. of America, were either denied or deferred.

Looking ahead, FPC outlined several projects that it might look upon with favor.

The commission would like to see a "well-founded" project to serve the Chicago market, which is in need of gas to supply both industrial and space-heating needs.

Service to the Duluth-Superior area is also clearly indicated, FPC said, as is service for northern Minnesota, central Wisconsin, and Michigan's Upper Peninsula.

More Controls in Canada?

Adoption of all of the Borden Commission recommendations on Canadian energy policy would lead the oil and gas industry toward almost complete government control.

That is the growing fear expressed by many oil men as they study the real impact of the report of the group—the Royal Commission on Energy—which submitted its first report last week (PW—Oct.31'58,p10).

E. D. Brockett, president of British American Oil Co., Ltd., said that the extensive regulation proposed for the oil and gas industry "should be approached with great caution because of its possible adverse effect on the future growth and development of the industry in Canada."

Hardly to the surprise of anyone, the commission recommended that the Canadian government continue to issue export licenses for natural gas for 25-year periods.

The commission's recommendations on validating gas export licenses were more lenient than had been expected, in that the group urged that natural gas determined to be in excess of Canadian foreseeable needs be made available for export.

The board also suggested repeal of the law that forbids sales of gas outside Canada at lower prices than those at which it is sold in Canada.

About the only surprising development with respect to natural gas was a recommendation that the government's earlier promise of an export permit to Trans-Canada Pipe Lines, Ltd., be withdrawn. The permit covered export sales to Midwestern Gas Transmission Co. of 200-million cu. ft. daily. The commission said that, since Trans-Canada has a market in eastern Canada for all the gas it is now authorized to move, it should seek a further allocation of gas from Alberta, and then apply for an export permit on its "merits."

Two recommendations, though, came as a surprise. One suggested that the Board of Transport Commissioners "should have all of the powers needed for the regulation of prices or rates, traffic, tolls, or tariffs of pipeline companies.

Such regulation would cover both oil and gas pipelines. Such rates, the commission said, "should be just and reasonable . . . and calculated to yield a fair rate of return on shareholders' equity."

The recommendation drew a storm of protest immediately. "If that is put into effect, there will be no more pipelines built with private funds in Canada," said one close observer. "Ottawa will have to build them all."

The other surprising recommendation was for the creation of a National Energy Board, to control and license export and import of crude and products as well as natural gas.

Such a proposal, according to some oil men, would mean placing imports of oil under mandatory control. Eastern Canadian refineries, which operate almost entirely on imported crude, have long opposed any form of import control—whether voluntary or mandatory.

While many Canadian producers have advocated some form of import regulation—either tariffs or quotas of some sort—the Canadian Petroleum Assn. was quick to express "great concern" over the creation of a National Energy Board.

CPA's concern, however, was primarily in connection with the delay of gas exports due to the time required to form such a board.

"In our opinion," said John W. Proctor, CPA general manager, "it will be tragic if, because of delays inherent . . . Western Canada finds itself seeking gas purchasers willing only to buy at give-away prices, in order that one of the nation's most productive industries may be kept from shriveling, its job incomplete, and its potential unrealized."

NEXT WEEK in Petroleum Week

It's axiomatic that the big oil company without a strong research effort is losing ground to competitors. Technology is advancing too fast for it to be any other way.

To show what competition is producing in the research lab, Petroleum Week has made a coast-to-coast survey of research and operating executives. A special report will review in detail oil's three basic research needs:

- **Getting the maximum values from each barrel of crude, through optimum processing.**
- **Reducing costs of finding and producing crude oil.**
- **Developing the "dream" tool that will directly detect oil underground.**

Issue date: Next week, the Nov. 14 issue.

PETROLEUM COMMENTS

By Wanda M. Jablonski

Sinclair-BP: A New Competitive Force

A potentially powerful new competitive force has been introduced into the oil picture by the new alliance between Sinclair and British Petroleum.

While the full possibilities of the new joint operating agreements announced last week by the two companies (PW—Oct.31'58,p13) will take some years to develop, several results should become evident soon.

The most significant should stem from the creation of a jointly owned company to market BP's Middle East crudes and Sinclair's Venezuelan crudes "primarily in the Western Hemisphere" (but excluding Canada for the time being).

This unit, to be set up in New York in 1959, will be staffed by both Sinclair and BP personnel.

* * * *

The greatest potentials for this joint sales unit will be in the U.S. market—for which the Sinclair-BP combination appears admirably suited.

It will be able to offer U.S. refiners not only various grades of Venezuelan crude, but the widest variety of the lowest-cost Middle East crudes. (BP's Middle East production ranges from low-gravity crudes to as high as 41-gravity, with the added protection of coming from four or five different concessions.)

At the same time, it will have the important added advantage of Sinclair's large domestic transportation and marketing facilities in 40 states, especially its extensive crude and products pipeline network that reaches most inland refining markets.

Thus, the new unit will be able to offer import deals not only to coastal refiners but also to inland refiners (within the limits of import quotas). To the latter, it will be in a position to offer a variety of special "package" import deals—involving trades for Sinclair's domestic crudes (Sinclair produces in 15 states), product exchanges, processing and shipping arrangements, or any number of combination deals that would suit a particular refiner's position.

In short, this new Sinclair-BP combination may well introduce a powerful new competitive factor into the U.S. crude import market.

Similarly, the new sales unit may also seek to move specialty Venezuelan crude to Europe, taking advantage of BP's outlets and sales organization there.

Though the announcement of the joint company referred only to crude sales, informed sources say it may also handle sales of certain refined products in the Western Hemisphere which could prove mutually profitable to both Sinclair and BP. The most promising immediate prospects would seem to be in the shipping and aviation fuel fields. BP is a substantial supplier of these products in the Eastern Hemisphere, but presently lacks Western Hemisphere supply points to round out global contracts.

Studies are also under way to see where else the two companies can complement each other's efforts. BP, for instance, started using some Sinclair aviation lubricants in England during the past year.

Also, if Sinclair should find oil in its new Sahara or Somalia concessions, BP could absorb this in its Eastern Hemisphere markets (which Sinclair lacks).

* * * *

Apart from the new joint crude oil sales company in the Western Hemisphere, the two companies also announced that BP will supply all Sinclair's future needs for Middle East crude for its own domestic use. While no details were given, informed sources report this will probably take the form of a 20-year contract for unlimited volumes, with provision for renewals. The terms are said to be exceptionally favorable. (Sinclair's present contract with Gulf Oil Corp. for Kuwait crude expires in three years.)

This is the closest thing to a Middle East concession without actually being one. It provides Sinclair with the long-term security of all the low-cost crude it can ever use (within the limits of import quotas)—at no capital cost and with no concession obligations.

At the same time, the two companies also announced a third move: creation of a joint company to engage in exploration and production "primarily in Latin America."

This will be of particular advantage to BP, which has long wanted to expand into Western Hemisphere production in order to reduce the vulnerability of its dependence on Middle East oil. Yet BP is barred from acquiring concessions in most of Latin America by laws prohibiting foreign government-controlled companies (BP is 56% owned by the British Government).

Now this handicap can be overcome. The new joint company can acquire the leases in Sinclair's name and make any oil found available to BP.

* * * *

The new Sinclair-BP alliance appears particularly advantageous for both. It would be hard to find two companies whose strengths are better suited to offsetting each other's weaknesses.

Basically, it is a logical joining of forces between a large, aggressive U.S. company with Western Hemisphere knowhow but a shortage of crude (Sinclair now buys 60% of its crude needs), and an Eastern Hemisphere giant with practically unlimited cheap reserves but lacking both markets and reserves in the Western Hemisphere (except a small operation in Canada).

By teaming up, each company can now greatly increase its own growth potential and flexibility in a way that neither could do on its own—and at no extra cost to either.

What's New / IN THE INDUSTRY

The world's deepest hole had another claim to fame this week—the dubious distinction of having the world's deepest fishing job. Phillips Petroleum Co. was preparing to perforate its No. 1-EE University, Pecos County, West Texas, when the perforating gun became stuck on the bottom at 25,340 ft.

Phillips' other ultradeep test in Pecos County—No. 1-A Montgomery—also was engaged in fishing this week. A wire line was lost in the hole bottomed at 23,400 ft.

•

California's Public Utilities Commission is going to take a sharper look at out-of-state wellhead prices of gas. It hopes to appoint a three-man task force to work full-time on regulatory proceedings before the Federal Power Commission involving field prices. Meanwhile, it has asked FPC to reopen certificate proceedings involving El Paso Natural Gas Co., sole supplier of out-of-state gas to California. The commission charges that 87 filings before FPC in recent weeks would raise El Paso's costs to California customers by $1.8-million.

•

Proposed conservation regulations in Arizona would require 80-acre minimum well spacing and depth-bracket proration. The proposals by Obed M. Lassen, state land commissioner, would limit oil production on a graduated basis, from 12 b/d for wells 3,000 ft. deep or less to a maximum of 75 b/d for wells 15,000 ft. deep. The proposals met with an immediate outburst of opposition from some oil men.

•

Postings for Oklahoma sweet crude became more confused this week with three different schedules. Indiana Oil Purchasing Co., effective Nov. 1, trimmed its purchase prices by 7¢ a bbl., making its top price for 40-gravity to 44.9-gravity oil $3.08 a bbl.—the same price offered for West Texas intermediate. Earlier, Sunray Mid-Continent Oil Co. and Kerr McGee Oil Industries, Inc., cut Oklahoma sweet by 14¢ to 31¢ a bbl., reducing their top posting to $3.01, and three other buyers met that cut. But the remainder still post a top of $3.15 a bbl.

•

Jake L. Hamon, Dallas independent, will be the first recipient of the Carl A. Young Memorial award, at the API annual meeting. The former API chairman is being honored for his "exceptionally meritorious service to the petroleum industry over the past 22 years." The award is the highest citation of the Division of Production. It was created as a special tribute to Young, who headed the division's staff for 29 years before his death in 1955.

•

Seven West Coast majors can stay in the retail business even if the government wins its antitrust case against them. That was decreed by Federal Judge James Carter of San Diego last week, as pretrial hearings continued in the omnibus, eight-year old suit. He also postponed the Nov. 12 trial date.

•

Imported products are not "directly competitive" with domestic crude, the U.S. Tariff Commission ruled this week. The ruling came as it turned down a request by the Texas Independent Producers & Royalty Owners Assn. to investigate crude and product import duties.

INSIDE *Slant*

IS IT DIVIDE AND CONQUER?

The producing segment of the Independent Petroleum Assn. of America isn't too happy with independent refiners getting into the importing act.

This was made clear during the panel discussion on the imports question during IPAA's recent annual meeting in Dallas.

During the question and answer period, Lester Clark, independent producer of Breckenridge, Tex., laid it on the line when he said:

"Today, you independent refiners are just getting your share of the imports quota. But next week, you'll be going to Washington asking for an increase.

"I just want you on my side, but you won't be if you get an imports quota."

Earlier, in his prepared text, Clark had stressed that "a serious problem should be recognized by all of us. We could easily lose many valuable supporters in our fight against imports by making importers out of refiners who can not use the imported crude."

While Clark put his remarks into the record, he wasn't the only one expressing the same sentiment. There was much lobby talk about the conflicting interests of those within the association.

LeRoy Menzing
EDITOR

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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
November 7, 1958

The government is still aiming for an imports plan "most equitable to all concerned." At midweek, this was the oil imports situation in Washington: No firm plan had been wrapped up, but there was a strong belief that one would be completed and made public within a couple of weeks. There was still a sharp divergence of views, but some basic agreement had been reached, too. First, imports probably will be restricted to 10.1% of total demand. Demand, not domestic production, will be used as a base. Quotas should be issued annually. Any "windfall" to companies normally not interested in importing should be avoided. And some provision must be made for major importers who have had a historical interest in foreign oil.

Administrators hope the new plan can be made detailed and specific. For example, if the plan makes provisions for extra import allotments to certain inland refiners, there is a belief that the plan should specifically list all criteria that a refiner should meet in order to qualify for an extra share. A minimum amount of discretion should be left to the program's administrator, the planners are saying. Meanwhile, you can discount rumors that Matthew V. Carson, program administrator, might quit. Carson will remain on the job even if his plan undergoes drastic revision.

•

Louisiana officials are critical of the Federal Power Commission's position on the state's gas gathering tax. State officials came to Washington last month in an effort to get a change in an FPC order on Louisiana's 1¢ increase in its natural gas tax, which went into effect in August. FPC refused to amend its order, and will require refunds by gas companies if the tax increase is held invalid by the courts. But the Louisianans assert that FPC is taking a narrow view—that the state only wanted an assurance that FPC would not require refunds of companies that had not paid the tax under protest, and thus would not get state refunds. FPC denied it is fostering an appeal of the tax case, but said it has been assured by some gas companies that the case will go to court.

•

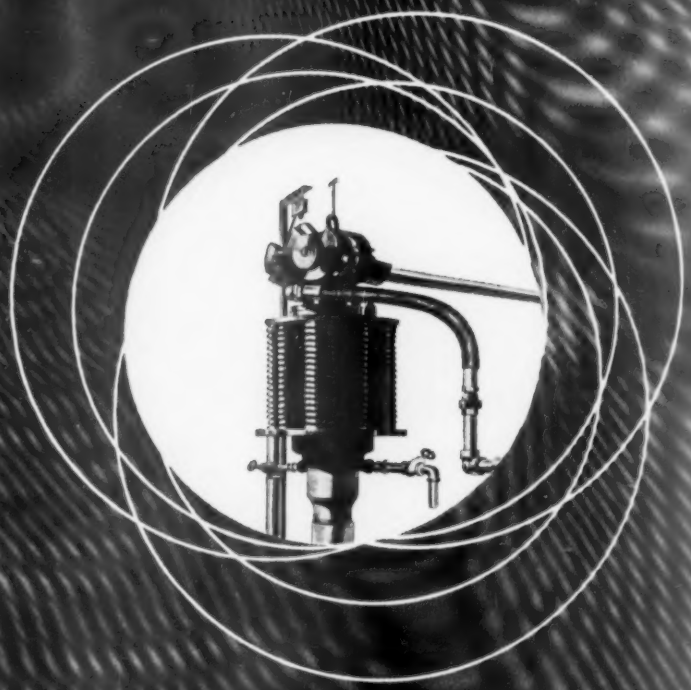
There is some industry disagreement over how to defend itself against attacks on the depletion issue. Suggestions have been made that a fund be organized to carry the depletion story to the public, through advertisements, pamphlets, etc. But some industry representatives in Washington are fearful that even the most proper use of a fund might be misinterpreted by depletion foes and thrown in the face of the industry.

•

FPC has cracked down on company visitors. In a new policy statement, the commission has asked gas company officials to make advance appointments to confer with FPC staff members—rather than the previous method of unscheduled "drop-in" visits. The commission's Bureau of Rates & Gas Certificates, particularly, has had its work disrupted because of such visits, FPC says.

•

The Interior Dept. is studying its order to suspend production in Utah's Aneth Field, following a one-day hearing at which several oil companies protested the order as "too drastic."



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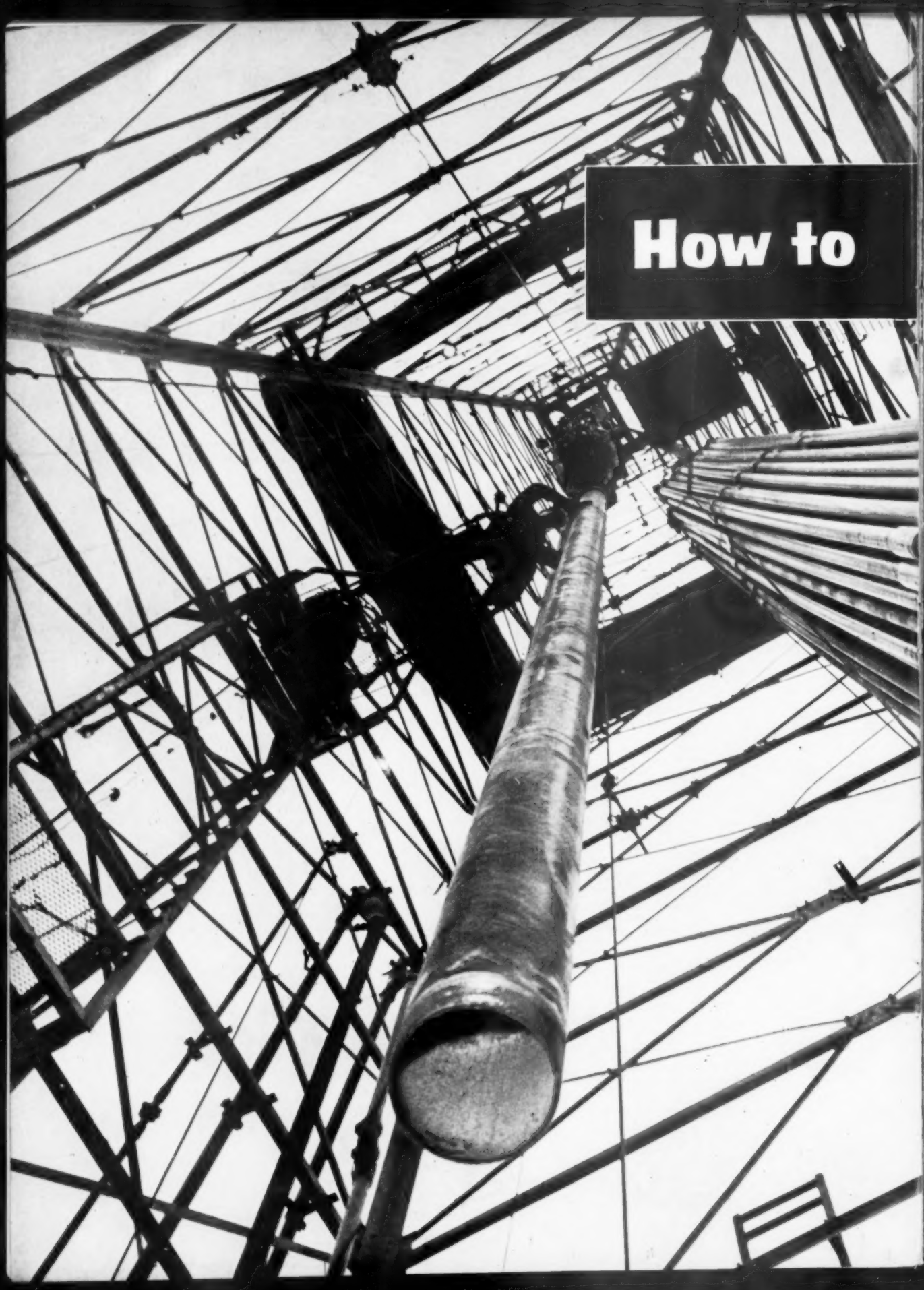
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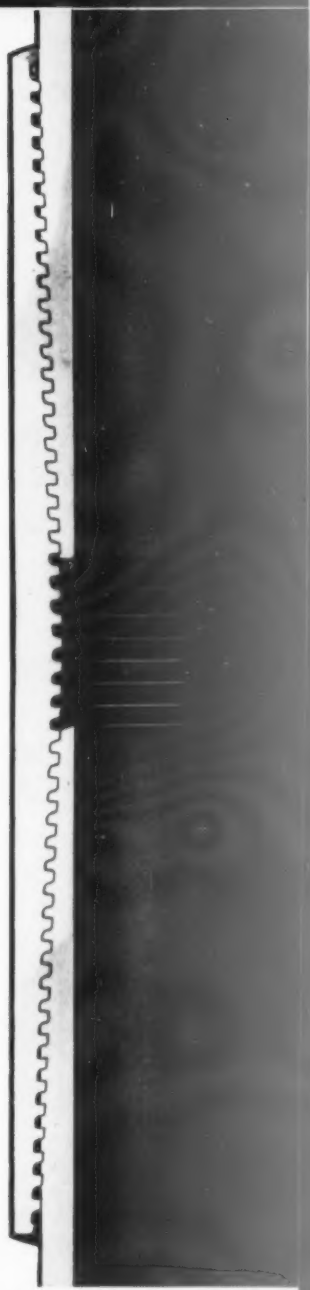

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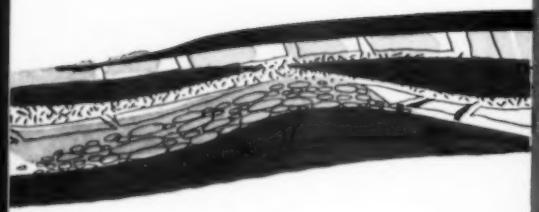

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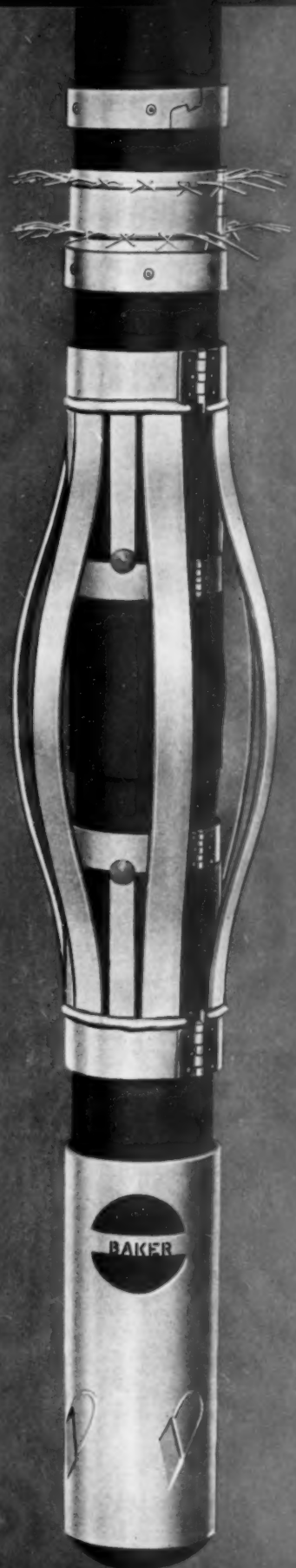
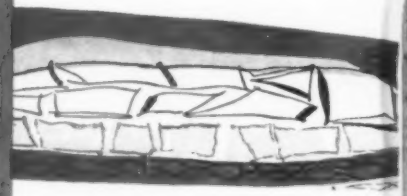


BAKER *Wall Scratchers*

... remove mud cake *only* from the cementing area. This "controlled scratching" protects productivity. No danger of "balled-up" mud on scratcher wires to plug the annulus with possible pressure surges, and "mudding-off" of production.



BAKER *Casing Centralizers*

... assure cementing clearance and do not remove mud cake to plug the annulus, contribute to pressure surges and restrict productivity. The "sled-runner" springs are pre-set to the optimum bowed height, and pass tight spots or dog legs without damage to the centralizer assembly. Their greater centering force maintains ample annular clearance for successful primary cementing.

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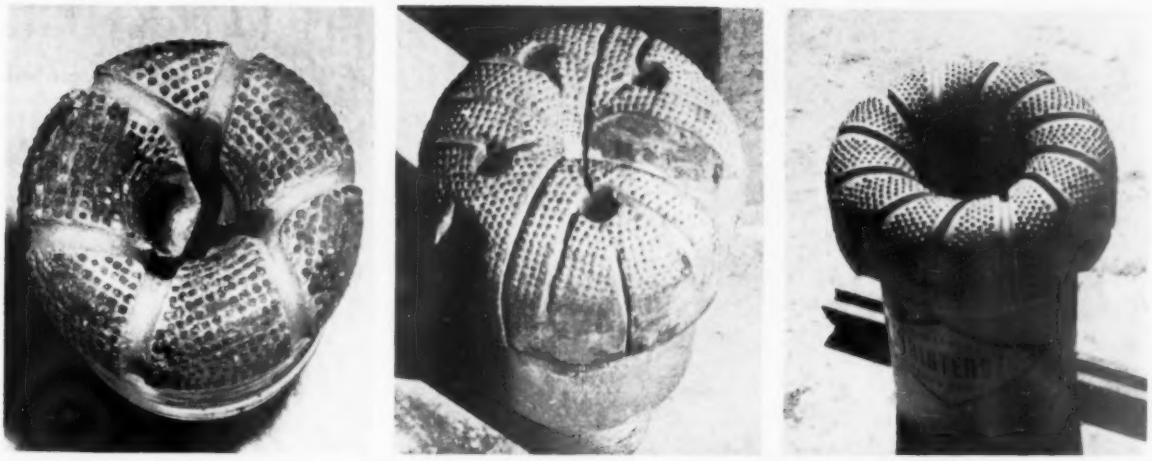


THESE DIAMOND BITS, and core barrel (right), are among various types used on Oklahoma's deepest hole. Despite some problems . . .

Diamond Bits Impress on Deep Test

Shell used several types below 20,000 ft. on its No. 5 Rumberger, cutting the number of round trips, and resulting in a penetration rate average of 1.79 ft. per hour.

Diamond bits have run up impressive drilling performance records on Oklahoma's deepest hole—Shell Oil Co.'s No. 5 Rumberger, in Beckham County.

Diamond bits were used exclusively to drill from 20,250 ft. to 23,953 ft. in the deep exploratory test in Elk City field. Use of diamond bits at this depth is a record in itself.

While diamond bits have been used extensively in various test programs, their use on the No. 5 Rumberger has afforded studies of their operation under ultradeep, high-pressure, high-temperature conditions.

Helmerich & Payne, Inc., of Tulsa, contractor on the job, has been using a big gas-engine rig (PW—Oct.3'58, p34).

After setting a 7-in. liner at 20,102 ft., operator used 5¾-in. rock bits to drill out cement inside and below the liner. The switch to diamond bits at 20,250 ft. was made in an effort to get better bit performance.

Altogether, 34 diamond bits, including one rerun, were used to drill the 3,703-ft. interval to 23,953 ft.

This interval consisted predominantly of hard shale, with lime-sand.

Upon reaching a depth of 23,953 ft., H&P continued drilling by means of diamond coring to total depth of 24,004 ft., reached in late October.

Two 25-ft. cores were cut, with recoveries of 88% and 100%, respectively. These are the deepest cores ever recovered.

Excluding performance of two bits, average footage per diamond bit was 116½ ft. Average time on bottom was 65 hours.

The two bits not included in the averages were pulled early because of fishing jobs and logging.

Maximum footage per bit was 392 ft., with a maximum time on bottom of 176¼ hours (7⅓ days).

Not all runs were satisfactory, however. One bit cut only 10 ft., and was on bottom only 8 hours.

While the primary objective with diamond bits was to minimize the number of round trips needed—each trip required up to 16 hours—penetration rates was considered good, averaging 1.79 ft. per hour over the diamond-drilled interval.

Several designs of diamond bits were used on the No. 5 Rumberger in an effort to improve bit performance and to arrive at a design that would drill all sections equally well.

Manufacturers of the bits used on the deep test (Christensen, Hycalog, and Diamond) cooperated fully with the operator and contractor in coming up with new designs.

Virtually every bit run was a little different from its predecessor. Some of the types used included flathead "bull plug," spiral core spitters, and clover leafs, and variations of each (pictures).

On some of the bits, water courses ran from the center of the bit out to the face edge. Others contained water courses which were cut entirely around the bit shank. Some of the spiral-shaped bits had center depressions to control center burnout, and others were flat across the face.

While costs of diamond bits are high when compared with rock bits, these are offset somewhat by performance and by salvage returns.

On the No. 5 Rumberger, bit salvage ranged from 50% to 75%, with a high of 90.7% and a low of 22.2%.

The condition of the bits when pulled ranged from scoring and burning, due to improper cooling, to normal wear from even drilling.

While some diamond bits may cost as little as $950, others may cost as much as $3,500.

Cost per foot in running a diamond bit, of course, is determined by many factors, including the salvage value of the bits, formation characteristics, time in cutting, and the like.

Some 5-11/16-in. bits might use as much as 25 carats of large diamonds (costing $11.25 per carat), plus 60 or more carats of smaller diamonds (at $9 per carat).

Final cost of a diamond bit, therefore, cannot be determined fully until it is pulled, performance studied, and salvage determined.

The experience gained on this very deep test also should contribute to lower costs in future applications. These, it appears, are likely to show an increase in the years ahead.

A SCHLUMBERGER ENGINEER, Joe Moffett, bends an ear to the riser for sounds of perforation shots fired on a deep test in Texas. Electronic devices also were used as . . .

Deep Perforations Set Record

A new depth record for perforating has been set at a West Texas deep well by Schlumberger Well Surveying Corp.

The mark was set on the Phillips Petroleum Co. No. 1-A Montgomery, Pecos County. This deep test was drilled to 23,400 ft. with an all-electric rig, then plugged back to 22,940 ft. for tests in the Ellenburger, which was topped at 22,598 ft.

Early this week, operator was circulating, preparatory to running drill-stem tests in the interval at 21,331-22,360 ft.

Several other records already have been set at this test, including the deepest single-stage squeeze-cement job—at 23,000-400 ft. (PW—Oct.3 '58,p34).

Over 900 shots were fired in the deep hole, over a 230-ft. interval reaching to a maximum depth of 22,880 ft. Downhole temperature was a major problem.

A maximum temperature of 386F was recorded at 23,000 ft. This temperature approaches the limit at which explosives presently used in perforating are effective.

This problem, therefore, called for considerable advance planning and preparation. The study was conducted by the headquarters engineering department of Schlumberger, Houston office.

Shaped-charge explosives, primacord, and blasting caps were all specially adapted for the operation.

In order to keep the temperature rise well below the maximum for effective firing of the shaped charges, each gun was fired as quickly as possible.

An interval of 30 minutes from the start of the descent to firing was maintained through the operation of 19 guns. The elapsed time for the entire operation was 40 hours.

Depth measurements on the job were closely tied to formation depths by the running of a radioactivity-casing collar log to give depth control.

The firing position of each successive gun was determined by casing collar reference, so that no dependence was placed on cable measurements from the surface.

This depth-control system, a Schlumberger spokesman says, made shot placement in the deep hole as accurate as operations conducted in very shallow holes, where depth control is a relatively minor problem.

The Schlumberger crew had also, in the past few weeks, run an electrical log, a microlog, a radioactivity log, a laterolog, and a dipmeter log, all around the 23,000-ft. level.

There were two production packers that were set following the perforation job.

The Pecos County wildcat is the world's third-deepest hole—being surpassed only by Phillips' No. 1-EE University, 13 mi. northeast of the No. 1-A, and by Shell Oil Co. No. 5 Rumberger, Beckham County, Okla. (page 27).

Pecos Tests Yield New Data

Drilling of several very deep wells in the Val Verde geosyncline in Pecos County, West Texas, has provided geologists with a preliminary look at subsurface geology in the area.

Addison Young, Phillips Petroleum Co. geologist, says that minimum information coupled with maximum imagination indicates that the entire Paleozoic section in the Fort Stockton-Del Rio region may be divided on the basis of lithology into three groups of strata.

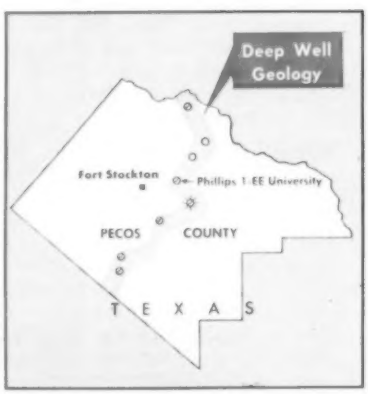
These are: (1) a lower unit, from the base of the Paleozoic to the base of the Woodford, which consists primarily of carbonates with a good deal of chert in the upper half; (2) a middle unit, from the base of the Woodford to the top of the Leonard, which is primarily dark shale, but includes much limestone in places; and (3) an upper unit, of upper Permian age, which includes the typical fine sandstones, dolomite, and evaporites of the West Texas Permian.

Phillips Petroleum Co. No. 1-EE University, the world's deepest hole, is of particular interest structurally, because it occurs in an area where the earth's crust is heavily folded and faulted, Young adds.

"After drilling nearly 5,000 ft. of typical Wolfcamp sediments," he says, "the well drilled into older Paleozoics in the overthrust zone, which is the abrupt termination of the Fort Stockton uplift.

"Complexity of this zone is suggested by the fact that the well encountered four separate segments of Devonian limestone and chert, and four segments of the Simpson formation. In the latter, dips as high as 67 degrees were recorded.

"Below a depth of 21,800 ft., the formations were encountered in nor-



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mal undisturbed sequence, and are believed to belong to the part of the crust beneath the overthrust block.

"The total amount of displacement in the area is shown by the fact that, whereas this well at 25,000 ft. was still several hundred feet above the basement, a well only 7 mi. north hit Precambrian igneous rock at a little less than 5,000 ft."

Young was one of a group of Texas geologists to report on new ideas and research findings last week at the University of Texas Conference on Geology.

Can Oil Be Found Directly?

The biggest challenge in logging today is the development of a direct oil-finding tool, says A. J. Pearson, of Atlantic Refining Co.

At present, he says, log interpretation can tell which zones will certainly produce water, which will certainly produce oil, and which may produce either water or oil. But too many zones, he says, fall into the third category.

Pearson discussed logging at the University of Texas seminar on petroleum engineering, a series conducted by Atlantic personnel (PW—Oct.31 '58,p18).

Displacement logging—which directly indicates the presence of oil—holds some hope for finding oil where it is now overlooked.

The theory of displacement logging has been proven, says Atlantic's W. C. Pritchett, who also spoke at the seminar. "Some field success has been experienced, primarily with a research-type tool which would not be practical for commercial field use. Until a practical field tool is developed, this technique is a technical success but an economic failure."

In displacement logging, the job is to develop a fast, accurate and economic tool, which will yield immediate results, says Pritchett.

The results, he says, must be in a form that is easy to interpret. Then the data can be used to answer the pressing question of which formations, if any, should be tested.

With such a tool, he says, a proven "dry" hole can be plugged with a good deal less of "that gnawing feeling that it might contain black gold."

Many improvements on present logging methods must be made in the future, says Pearson.

Perhaps first, he says, we will see improvements in our present logs.

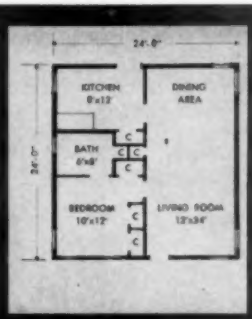
"We need to determine true resistivity, porosity, and water resistivity to tell whether a zone will produce water or oil.

"Today we have logs that can be used to determine true resistivity under ideal conditions. We need a better log, one that will be more general in use. Perhaps the first step will be to combine some of the present resistivity measuring devices such as the laterolog and the induction log."

Computers also may enter the picture to aid in logging work.

"Digital computers have come into widespread use in the oil industry in the past few years," says Pearson. "But as yet they have not been used widely to solve electric logs."

"Why can't we add the computer to the logging truck," he suggests, "and calculate porosity from the microlog and the microlaterolog—plotting the results as a porosity curve on the finished log? The same thing could be done with other porosity tools. Computers won't solve all the problems, but perhaps they will help us solve more problems than we are now doing, or at least point out which formations need detailed study."



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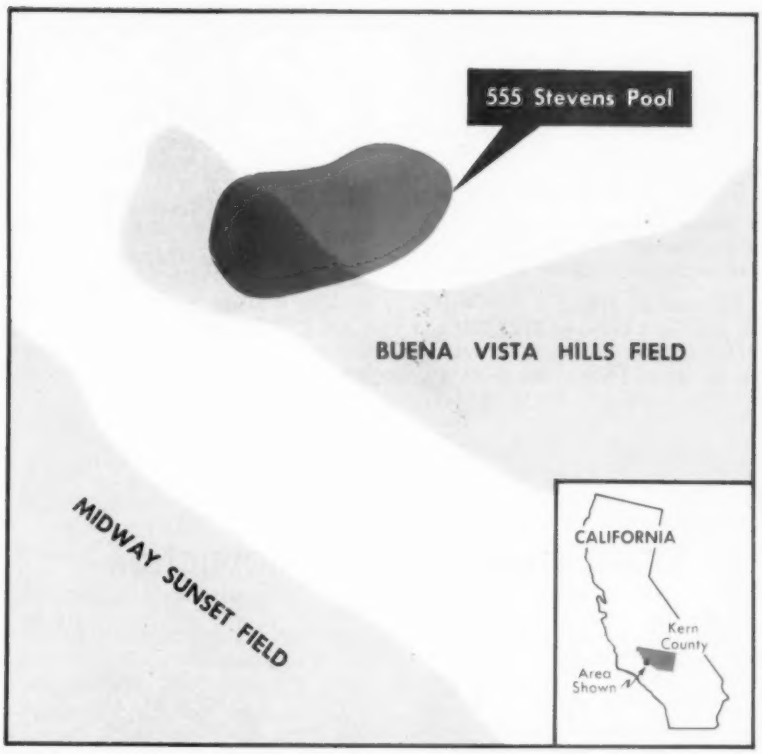

California Has Prolific New Pool

Though the days of the uncontrolled well are gone in California, Tidewater Oil Co. has proved that the potential is still there—if you drill in the right place.

The right place in this instance is the old Buena Vista Hills field, 6 mi. northwest of Taft, Kern County.

The new pool in the field, which has revitalized the entire area and touched off a busy development, is known as the 555-Stevens, named after the discovery for the pool.

One well in the new 555-Stevens pool has been completed for 2,900 b/d, the biggest to date.

Tidewater No. 525, section 20-31s-23e, flowed at a 2,900 b/d rate through 74/64-in. choke with 1,160,000 cu. ft. of gas per day from the Stevens formation at 5,431-519 ft. After flowing at this rate, the well was cut back to a 24/64-in. choke through which it flowed at a 1,284 b/d rate. Present production through 14/64-in. choke is 669 b/d.

The well was also tested at 5,519-565 ft., flowing at a rate of 1,656 b/d of oil with 530,000 cu. ft. per day of gas.

One reason for the well's high potential is the permeability of the pay sand in the new pool.

The average permeability in the pool is conservatively set at about 2,000 millidarcies, though it has run as high as 7,000 millidarcies. Normally, a permeability of 200 or 300 millidarcies is considered excellent in California.

The producing sand is the Stevens (upper Miocene), which is a prolific pay in various other San Joaquin Valley fields. In the 555-Stevens pool, the sand is fine to coarse and locally conglomeritic.

The new pool represents the first major Stevens sand production in the Buena Vista Hills area.

Buena Vista Hills has been productive since 1909, and presently has some 1,023 wells, producing about 19,000 b/d of oil.

Previous production from the field has been largely from various Pliocene sands and from the Antelope zone in the Miocene. Since its discovery, the Buena Vista Hills field has produced upward of 500 million bbl. of oil.

The discovery of Stevens sand production has touched off a drilling play in the area.

Honolulu Oil Corp. No. 10 Calidon, ½ mi. west of production, flowed oil at the rate of 912 b/d through ¼-in. choke and perforations at 5,233-301 ft. in the Stevens. Gas flow rate was 320,000 cu. ft. per day. Honolulu

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T-C JET STRAINER

Jet Strainer

is now coring ahead to look at an additional zone. Standard Oil Co. of California and Richfield also are active in the pool.

Tidewater will drill No. 536, a north offset to a Stancal producer. Stancal will offset its first well in the pool to the west, and Richfield will offset its first producer to the west.

The boxscore in the new pool now stands at six completions and one abandonment.

Present production is about 1,800 b/d, under severe cutbacks.

Tidewater is operator for four wells, with Richfield sharing equal interest.

The lone dry hole was a 5,817-ft. test drilled by Stancal ½ mi. east of the discovery.

The well that touched off the play was Tidewater's No. 555 Tidewater-Richfield, completed in November, 1957.

The discovery flowed 400 b/d of 31.2-gravity oil and 1,860,000 cu. ft. of gas through 12/64-in. choke and perforations at 5,028-199 ft.

The cost of drilling a new well in the pool runs between $125,000 and $150,000, with drilling time averaging 46 days. Drilling poses no particular problem, and the development is being planned on 17.7-acre spacing.

The main headache is the gas cap overlying the pay sand. As it expands, it increases the gas-oil ratio, raising the problem of going back into completed wells to exclude gas.

As a means of handling the gas cap on its newest well, Tidewater cemented 7-in. casing on bottom, then selectively perforated to exclude the gas. As the gas cap expands with production, it probably will be necessary to go back into the well to squeeze off zones going to gas.

Accumulation of oil and gas in the new pool is believed due to an anticlinal structure-type trap.

What's New / IN EXPLORATION, DRILLING, PRODUCTION

Lake Erie Drilling Halts for Winter

The platform used to drill the first offshore well on the American side of Lake Erie has been towed into harbor for the winter (PW—Jun.27'58,p22).

New York State Natural Gas Corp. used the platform in Block 1, Pennsylvania state lease, about ¾ mi. from shore. A gas well, flowing 200,000 cu. ft. per day, was completed and shut in on the lake bottom. A diver descended 35 ft. to the lake floor to disconnect the standpipe from the master gate, which will remain on the bottom.

Further offshore drilling will be done in the spring.

•

Leasing News

The Texas Highway Commission is considering leasing road rights-of-way for oil and gas development.

The state owns mineral rights on some older sections of its 52,000-mi. highway system.

Numerous problems are under consideration, including the effect of leasing on unitization agreements, title problems, and the fact that strips of land through many oil and gas fields would be involved.

The Oklahoma Planning & Resources Board has been forced to rerun a lease sale, due to a legal oversight.

On Oct. 22, the board opened bids on ten tracts, totaling 3,315 acres, in Lake Murray state park, Love County. Bids on the tracts totaled $392,880, averaging out to one of the highest sums per acre bid for state leases in several years.

However, it was discovered that the law required the leasing bids to be advertised in a publication in the county in which the land lies. Bids were advertised, but not in Love County. An ad will be placed in a county newspaper, and bids will be reopened Nov. 19.

Oil and gas lease rentals in Alaska next year may reach $9.5-million, not including royalties, according to M. O. Allen, of the Bureau of Land Management.

This compares with receipts of about $4.5-million received to date, due chiefly to the Richfield Oil Corp. strike on the Kenai peninsula 15 months ago, says Allen. Since then, applications have been filed for more than 33.5-million acres in Alaska.

The Bureau of Land Management will lease three parcels of Federal lands in Wyoming on Dec. 19.

The parcels, totaling 1,564 acres, are within the known geologic structure of the South McCallum field, Jackson County.

•

Producing Properties, Inc., will acquire assets of Oceanic Oil Co., Los Angeles, in return for 750,000 shares of common stock to be distributed to Oceanic stockholders.

The transaction is expected to be completed in December, after stockholder meetings have ratified the deal.

Under the plan, all the assets of Oceanic would be turned over to PPI, and the company would be liquidated.

Oceanic has approximately 6.6-million bbl. of oil reserves, 231 producing wells, two waterflood projects, and properties in the U.S. and Alaska.

•

Gardner-Denver Co. will purchase Mayhew Machine Co. and Mayhew Supply Co., both of Dallas.

The proposed acquisitions, involving in excess of $5-million, will be effected by an exchange of stock.

Mayhew is a producer of seismograph and geophysical equipment, and manufactures light drilling rigs.

•

Canbridge Corp., Ltd., Calgary, has bought the drilling equipment of Devon Drilling Co., a division of Amurex Oil Co.

With the acquisition of Devon's three rigs, Canbridge will be operating 14 drilling rigs in western Canada.

•

O. W. Killam, of Laredo, Tex., has abandoned for the time being his 25-year quest for oil on the Pescadito Dome.

The last test on the Webb County structure was drilled to 19,505 ft. and abandoned (PW—Oct.10'58, p26). Geologists are not agreed that the formation at that depth was the Edwards limestone. If this formation lies even deeper, Killam feels there still is hope for production at greater depths.

•

Houston Oil Field Material Co. has

opened an oil-industry servicing depot in Alaska.

The new depot, at Anchorge, is equipped with a complete line of directional tools, fishing tools, and other equipment.

•

The Office of Naval Petroleum Reserves will open bids for Teapot Dome Reserve's oil on Nov. 14.

The Navy mailed out 22 bid invitations on Oct. 24. Drilling on the Wyoming reserve, recently authorized, is aimed at offsetting drainage by nearby commercial operations.

•

The U.S. Geological Survey has approved the biggest unit in the history of Wyoming (PW—Aug.1'58,p32).

The Bridger Hill unit covers 137,284 acres in Lincoln and Uinta Counties, in the southwestern part of the state. El Paso Natural Gas Co. is operator.

•

Garfield County claims Oklahoma's most prolific gas well, according to a report issued by Kilgore & Barby, consulting geologists.

The cumulative report lists detailed information on 12,000 gas wells throughout the state. The report will be updated each six months.

The biggest gas well is the No. 1 Rhodes, still active after producing 30-billion cu. ft. of gas. Two other outstanding wells are the No. 1 McBee Unit, in Leflore County, which has produced 27-billion cu. ft. and the No. 2 Sturgeon, in Texas County, which has produced 12-billion cu. ft. from the Morrow sand in less than two years.

•

The Texas Railroad Commission has approved a waterflood project in the East Bryson field, Jack County, North Texas.

The project will be conducted by Bluebonnet Oil & Gas Co. Engineers estimate additional oil recovery of 675,000 bbl.

•

Engineering

A pint-sized gas plant, to handle small gas streams, is being manufactured in Houston by Chillgas Corp.

J. A. Newsome, Chillgas vice-president, says that with the new process, dry sales gas and liquids products can be recovered profitably from raw gas streams as small as 500,000 cu. ft. per day. The engineering key to the new process, says Newsome, is a dual-purpose refrigeration system that strips and dehydrates the raw gas without pressure drops or contamination by chemical additives.

•

Drilling Highlights

South Dakota—A. L. Schlaikjer and Herb Clarkson No. 1 Government, section 23-21n-3e, Harding County, recovered 1,890 ft. of heavily gas-cut oil on 3-hour drillstem test of the Red River at 8,460-511 ft. There has been no drilling between this prospect and Buffalo field, 3½ mi. east, which also produces from the Red River.

West Texas—Curtis R. Inman No. 1 J. G. Nutt, section 5, block 180½, TC survey, Pecos County, was completed for 541 b/d, based on flow of 157 bbl. of 26.6-gravity oil in 7 hours, from open hole at 2,380-407 ft. in the Grayburg (Permian) lime. Nearest production is 6 mi. south, in the Puckett gas area.

Oklahoma—Gulf Oil Corp. No. 1 Bass, section 36-9n-4w, McClain County geological test ¾ mi. west of Southeast Newcastle (Devonian) pool, flowed 89 bbl. of 52-gravity oil in 4½ hours through 17/64-in. choke and perforations at 10,236-44 ft. in the Tulip Creek (Ordovician). Gas volume was 3,010,000 cu. ft. daily.

South Louisiana—Lamar Hunt et al No. 1 Rice Land & Lumber Co., section 28-5s-8w, Allen Parish, was completed for 171 b/d of 53.8-gravity distillate and 1,233,000 cu. ft. of gas daily through 10/64-in. choke and perforations at 9,828-46 ft. The discovery is 1½ mi. northwest of Harmony Church field.

Montana—Miles Jackson, Inc., No. 1 NP-McConnell, section 1-8n-29e, Musselshell County, yielded 22 bbl. of oil per hour on the swab through perforations at 7,079-99 ft. Earlier test of perforations at 7,111-33 ft., also in the Amsden, recovered oil at the rate of 18 bbl. per hour. No drilling has been done within a 5-mi. radius of the wildcat, which is 10 mi. southeast of Delphia field.

Kansas—White Eagle Oil Co. No. 1-14 U.S.A., section 14-26s-35w, Kearny County, opened Kansas City-Lansing production in the Southside pool, which produces from the Mississippian. The well was completed for 104 b/d on the pump through perforations at 4,129-42 ft. The pay opener was originally completed in September, 1957, in the Mississippian.

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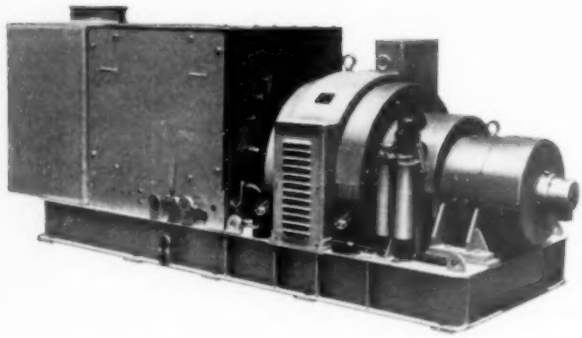

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■ In the coming dogfight for profits the victors will be those with the sharpest competitive teeth – the newest and most efficient drilling rigs, refineries, pipelines, and service stations.

■ Modernization in '59 will decide who will be strong in the future.

■ A PETROLEUM WEEK **SPECIAL REPORT**

'59 PLAN CONTENTS

What Petroleum Week's Industry-Deep Survey Shows . . .

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'59 OIL'S OUTLOOK

The Next Year Is Ripe for Modernization

There's little need for expansion—but a great need for newness and efficiency. These qualities will be heavily stressed.

The year 1959 will go on record as one the U.S. oil industry spent polishing its tools and techniques for the rough competitive fights of the 1960s. Modernization will be the big word. The principal reason, according to industry men surveyed by Petroleum Week: The main need today is not for more tools—it is for better tools.

Plagued by overcapacity, oil management sees little economic sense in expansion-spending that will only make matters worse. In a period when crude price cuts and gasoline price fights make almost daily news, the conviction is spreading that the narrow margin is here to stay for a while.

Leaner oil profits are causing the closest look yet at ways of getting the most from investment dollars.

Not only are earnings well below earlier levels, but the costs of labor and materials apparently will keep on rising. Despite the popular impression that oil is the "richest" industry, many other industries are earning a higher rate of return on capital investment. Oil's return last year was 13.6% after taxes, and undoubtedly it will prove to be still lower for the full year 1958. Yet auto manufacturers last year had a 16.4% return, aircraft 20.1%, and drugs and medicines 24%. In these tightening financial conditions, oil men are finding an increasingly heavy penalty on inefficiency and the use of obsolete, low-return equipment.

Furthermore, 1959 may be the last year oil companies will have to get squared away—with modern equipment and methods—before the big supply job of the 1960s. Oil consumption should start picking up again fairly soon. Oil economists are now predicting that total demand for petroleum in 1959 will increase somewhere between 3% and 6%. This follows the two-year period since 1956 during which there was no significant change in consumption. For the longer run, the economists are forecasting a return to the annual growth rate of demand that historically has ranged between 4% and 5%.

The cumulative effect of yearly demand increases will eventually create a capacity problem. A roundup of predictions from several sources by the American Petroleum Institute includes forecasts that by 1965 there will be 18-million more people in the country than today, 14-million more cars and trucks on the road, and a one-third increase in industrial activity.

Favoring modernization next year is the fact that it will be easier and cheaper than it will be in the 1960s. This is because:

- Machinery, parts, materials, and labor will be more readily available than they will later, when the economy is going full blast.
- With lower interest rates and less competition for loans, it will be both easier and cheaper to borrow money. Companies that wait for the boom run the risk of having to pay higher interest rates, and to look harder for money.
- Although there is an adequate supply of most types of labor now, the prospect is for a tight labor market over the years ahead. Installation of more efficient equipment and facilities—especially those involving automation—is a good way to anticipate the rise in labor costs.
- The cost of investing in new and improved equipment and plants will almost surely be lower in 1959 than in the years following.

A rough measure of the large amount the oil business will spend on modernization next year lies in the 6% increase in capital spending oil companies say they will make next year (page 15). Although the production segment of the industry is the only one expected to show gains next year, the other segments will retain a good level of spending. Thus, with spending for expansion being held in check, a large investment in modernization already seems assured for 1959.

300 Men Talking

This 35-page, interview-survey report is Petroleum Week's most comprehensive to date. It is based on comments by close to 300 men with big and small oil companies—in every segment of the industry—in all parts of the country. Also included are views of several dozen equipment and service company men, bankers, consultants, and other outside specialists.

CONTINUED ▶

'59 DRILLING & EXPLORATION

Drilling Men Face Need to Modernize To Stay Alive

DEEPER DRILLING equipment will be stressed. This is Phillips Petroleum's Rig 27 (depth record-holder), a National Supply Type 130 rig, with Lee C. Moore derrick.

Contractors with up-to-date equipment will find business steady. But dollars to fight growing rig obsolescence are hard to find.

You will find near unanimity among drilling contractors and operators in this important respect: A hefty portion of existing drilling equipment is inefficient and needs to be replaced.

One survey by a large supply company shows that nearly one-third of the approximately 3,500 rotary rigs available for service were bought before 1949. Of the remainder, about 1,575 rigs were bought from 1949 through 1953. This leaves only about 850 rigs now in use that are less than five years old.

This same company estimates that about 20% of all rigs are obsolete, and are being junked at the rate of two per week.

Here is another hard fact of current drilling life: Since the supply of rigs far exceeds the demand, only the owner of an efficient rig can hope to compete economically in today's drill-or-die situation.

Only about 48,000 holes will be drilled this year. This compares with 53,668 last year and 58,271 in 1956, the peak year. This decrease of nearly 18% in two years has taken many drilling contractors down bankruptcy road.

Because of the current level of drilling activity, only about 2,100 rotary rigs are presently active in the U.S. and Canada—a precipitous drop from the nearly 3,200 that were active in the peak month of December, 1955.

Of course, some contractors with obsolete equipment will manage to win some jobs, usually by quoting lower prices at the sacrifice of a fair and reasonable profit. But this only delays the day of reckoning.

Simple economic and operating facts—faster drilling, with less downtime and maintenance—are the keys to the why of purchasing of new equipment.

It is becoming almost impossible to operate an inefficient rig in the present market. "It's hard to get around the fact," says a supplier, "that lost time is much more expensive than the cost of replacing equipment."

Another supplier sums up the situation: "There is hardly enough latitude to do a poor job."

Many drilling contractors are upgrading some of their rigs by "cannibalizing" good working parts from other, idle rigs. But while this permits a contractor to stay in business without spending large sums of money, it only delays needed overhauls and replacements.

One supplier warns: "The contractor or operator may be cannibalizing himself into oblivion. If you make no attempt to replace your stacked equipment, you are heading for trouble."

Cannibalization can be a sound practice if it leads to retirement of the cannibalized, inefficient rig. Then, too, as one supplier notes: "Present-day economics won't permit a whole new rig. This is the main reason—and the best argument—for cannibalizing what you have and then bridging the gap with new equipment."

A related development is the purchase of used equipment. Often, however, such second-hand equipment runs up repair bills and maintenance costs, making it more expensive in the long run.

In addition, daily operating costs are much higher with an old rig than they are with a new one.

Says one drilling contractor: "I know that the big argument here is: 'Well, my depreciation is lower.' On paper, your daily operating costs may appear greater with new equipment, because of the big depreciation the first year.

"But when you figure that you can make more hole quicker, with less

PLAN '59 CONTINUED ▶

In the field

IN ONE ECONOMICAL PACKAGE

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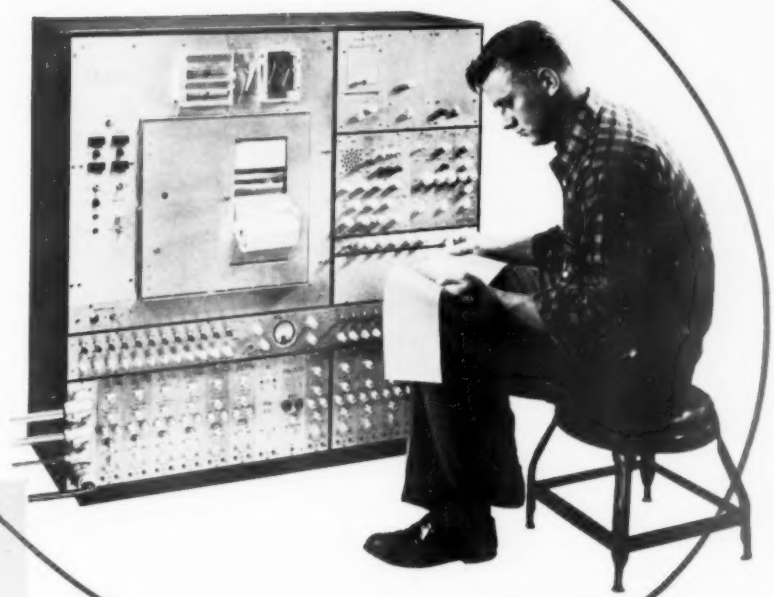

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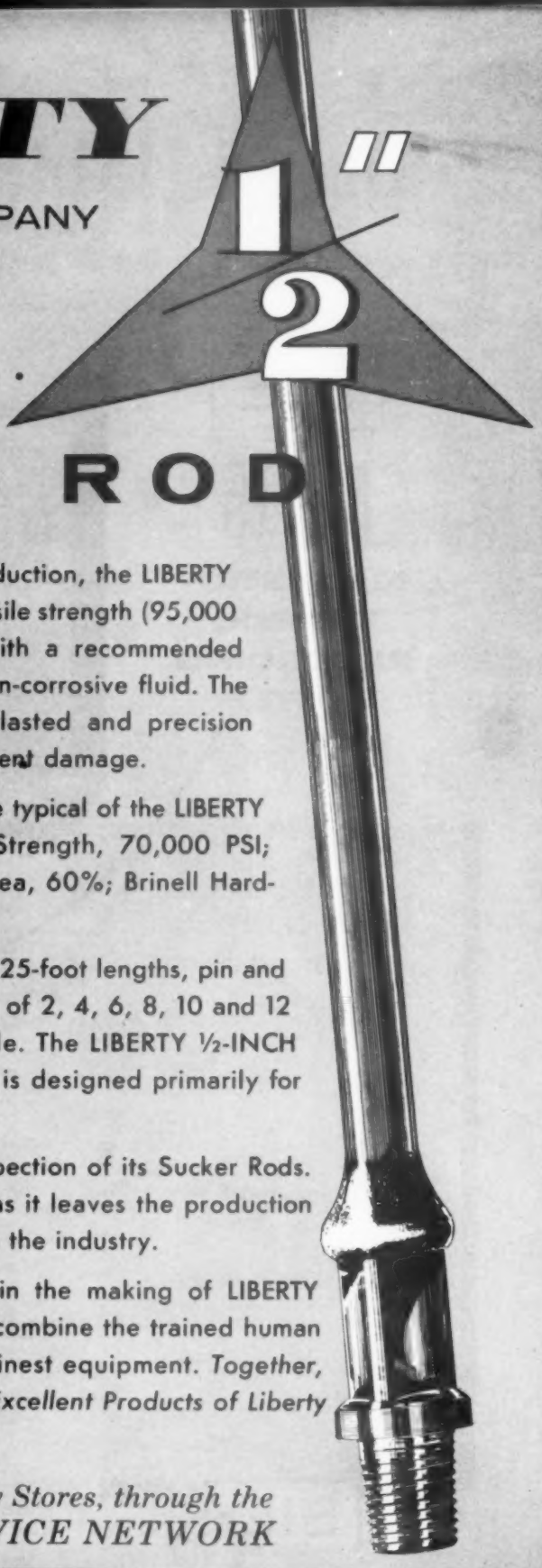

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Other noteworthy physical properties which are typical of the LIBERTY ½-INCH SUCKER ROD include: Yield Strength, 70,000 PSI; Elongation in 8", 19%; Reduction of Area, 60%; Brinell Hardness, 192.

LIBERTY ½-INCH SUCKER RODS are made in 25-foot lengths, pin and pin type only. Pony Rods come in lengths of 2, 4, 6, 8, 10 and 12 feet. 1-inch Polish Rods are also available. The LIBERTY ½-INCH SUCKER ROD with 1-inch O.D. coupling is designed primarily for use in 1¼-inch tubing.

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maintenance, then you are actually saving on the cost of the rig, which, in turn, offsets the higher depreciation.

"It will take a lot of guts to do it, but operating new equipment enables you to reduce your out-of-pocket daily operating costs. In addition, and most important, you reduce your operating hazards."

Contractors who have continued to modernize despite the times are now busy. Since they are busy, they have less downtime—which means they can drill cheaper and, therefore, get more work.

A supply house manager reports: "It's very obvious to the supply houses that the companies that continue to modernize are the firms that are making the money today. Offhand, I can think of four firms right now who are leading the pack. These firms have purchased the newest equipment, have adopted the newest techniques, and are quite successful."

The emphasis on deeper drilling has created a particular need for modernizing with rigs capable of going to 10,000 ft. and deeper.

One trade association official estimates that nearly 70% of the 10,000-ft. holes drilled today are drilled with rigs not rated for such depths.

"Formerly," he adds, "the major oil companies who contracted their holes wanted a 10,000-ft. rig for a 10,000-ft. hole. But in the pressure to cut costs and get the job done a little cheaper, the majors have come to allow the use of lighter rigs.

"This sanctioned use of lighter equipment is tending to wear out the rigs faster than they normally would. So this has actually accelerated the depreciation of equipment."

Inflation, too, tends to make purchase of a rig—or vital components—good sense in today's market. What's more, contractors can get quick delivery now.

The trade association official says: "We have had steady inflation for the past several years. Any contractor who purchased a rig last year would have to pay more for the comparable rig today. Consequently, if he buys now, he will, theoretically, save, because that same rig is going to cost more next year.

"The returns will be greater any time in the future, technically, than the investment required now.

"If you wait until you think times are better to buy, remember that everyone else may be doing the same thing. So you won't be able to get that new rig when you need it because everybody will be scrambling for equipment.

But perhaps the most important point for drilling contractors and operators is this: Nearly everyone is agreed that drilling activity will increase next year and in the years ahead.

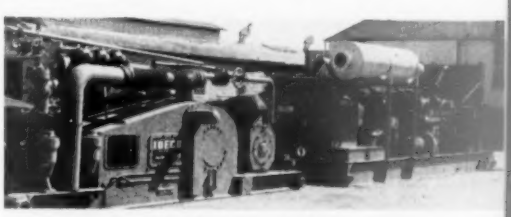
Some observers see a 50,000-plus year for 1959 in wells drilled. One of the latest estimates—by Republic Steel Corp.'s economist W. P. Carlin—points to a possible 65,000 holes per year by the mid-60s.

LOW CONTRACT PRICES HURT

In the face of rising labor and equipment costs in recent years, contract prices have continued to drop. What makes this situation hurt even more is that much of it is due to the actions of drilling contractors themselves.

C. L. Vickers, of Continental-Emsco Co., put it this way in a recent talk before drilling contractors: "You are tough traders when you buy a drilling rig. What do you do with your trading ability when you make a contract?"

The American Assn. of Oilwell Drilling Contractors reported early this year that the average contract price in 1957 fell to a 14-year low of $4.60 a ft. (PW—Jan.24'58,p9). The ratio of contractors' prices to total drilling cost per foot also showed a decline to a little less than 33%, compared with 40% in 1954, 56% in 1943, and 62% in 1935.



MORE HORSEPOWER trend is represented by Ideco 600 input hp. duplex slush pump, unitized on two skids.

BIGGER PUMPS, increasingly popular, are typified by these mud pumps for Coastal Drilling Co.'s new Emsco GB800 rig.

STORE MODERNIZATION effort of oil field supply companies is illustrated by this new store of National Supply Co. at Wichita Falls, Tex. Developed in line with master plan of designer Henry Dreyfuss and National men, store program emphasizes efficient operation, attractiveness, and good working conditions.

PLAN '59 CONTINUED ▶

Modernization Targets

Here are some of the items drilling contractors, oil companies, and equipment and supply men say will be getting close attention in modernizing programs next year:

- Bigger equipment with more horsepower—especially pumps—for deep drilling.
- Smaller, lower-cost pipe, blocks, masts, and other equipment for slim-hole drilling.
- Faster transportation of equipment, and shorter rig-up time. Unitizing of rigs.
- Automatic rig controls, power slips, swivels.
- Improved drilling muds and downhole techniques.
- Magnetic tape in seismic recording.
- Exploration data-processing machines.
- Streamlined accounting procedures.

NEW RIGS, providing speed and reliability, are getting business for contractors. Example is Brown Drilling Co.'s lightweight trailer-mounted rig, the Mighty Mole.

Says one Texas drilling contractor: "We can never pass costs along as fast as they occur. And when drilling is down, as it is now, you don't pass along much of anything."

Another contractor says: "The drilling contractor, in effect, is selling his equipment to the oil companies." He explains that the contractor is taking jobs for such low prices that he isn't getting enough in return to buy the new equipment he needs.

But, there is this view too: "You may find, as I have, that the competitor you have been accusing of price-cutting has stolen a march on you, and is actually drilling the wells faster than you can. His low price may be more profitable to him, because of his greater efficiency, than your higher rates would be to you."

USE OF BIG EQUIPMENT GROWS

What are drilling contractors actually doing to modernize for today's tough competitive situation? One answer: They're turning to bigger, heavier equipment, particularly suited to deeper drilling.

One supply company official says: "We feel that deeper drilling is going to be the salvation of the equipment business. There are just not enough shallow areas for future exploration. Drilling, domestically, is going to go deeper. And the contractor or operator who has the latest, most modern equipment that can drill deeper holes more cheaply and more efficiently is going to get the business in the future."

This opinion was voiced again and again by contractors, operators, and suppliers surveyed by PETROLEUM WEEK across the country.

Brewster-Bartle Drilling Co., of Houston, for instance, has had all of its 14 rigs operating recently, and has averaged less than 14% downtime during the whole difficult period the industry has faced. Analysis of the jobs done by Brewster-Bartle gives some explanation for the record. Its 14 rigs are averaging better than 10,000 ft. per rig, underscoring the trend toward deeper drilling.

W. C. Bartle, president, says the company has been preparing for this trend for several years, strengthening its units with all kinds of new equipment—bigger and heavier pumps, bigger blocks, and more power. Adds Bartle, "we're making holes a lot faster, and with a lot less trouble."

Bob Montgomery, of Casey & Montgomery, Bakersfield, Calif., says: "We're almost out of shallow drilling. We're going to heavier rigs. We're making a 10,000-ft. to 11,000-ft. rig out of a rig that formerly went to 8,500 ft. We'll put it together out of components from various rigs we now have."

Some contractors who have beefed up their equipment for drilling down to 18,000 ft. or deeper haven't been able to find jobs for all, however. So this heavy equipment has been used on holes going to 12,000 ft. or 13,000 ft. Result: There has been a big cut in drilling time, though not enough to offset the low prices obtained.

Bigger slush pumps, particularly, seem to be a preferred item in this trend to bigger equipment. Increased horsepower in all areas seems to be the byword. Basic aim: Increase penetration rates.

Says one supplier: "Modernization of pumps is the simplest way to modernize rigs, and usually is the item that is needed most."

Magnolia Petroleum Co. reports that it increased operating performance an average of 18% last year by increasing pump and engine horsepower. In the Gulf Coast area, performance increased as much as 45%.

One California drilling contractor says: "Like all the other contractors, we're buying high-pressure pumps. That's where we're putting our money. For example, a rig that used to have a 14-in. pump now has a 16-in. pump."

Another contractor says: "An oil company doesn't pay too much attention to the mast, or the hoist, but the first thing it looks for is high-pressure pumps. If bids are comparable, and one contractor has high-pressure pumps, he gets the nod."

Montgomery adds, "We're generally upgrading all our equipment by putting more power on the pumps and drawworks, and also using pumps that will take more horsepower. We're also buying higher-horsepower engines. A 500 is our biggest now; it used to be a 350."

A supply company official notes that major company engineers now specify horsepower, pump rates, and safety factors on rigs they use. "Unless a contractor continues to modernize his equipment, he can't provide the type of equipment needed," he adds.

SLIM HOLES PROMISE SAVINGS

Paradoxically, while there is a trend to bigger, heavier equipment, there is also an opposite trend toward smaller, more compact equipment, especially for slim-hole drilling.

Harry Pistole and Martin E. True, of Humble Oil & Refining Co., gave the American Society of Mechanical Engineers some cogent arguments in favor of small-bore holes last month in Denver.

"If the small-hole well of tomorrow appears to be a passing fancy," they said, "it should be noted that 437 wells having hole sizes ranging from 4¾ in. to 6½ in. had been drilled by one operator to the first of this year. The total saving from the program was $3-million.

"To date, this same operator has completed 28 wells with 2½-in. oil string, and in many of these wells no tubing string is needed, or used. Savings on these minimum-cost wells have exceeded 30% in many cases."

Humble's T. A. Huber also notes that savings in casing tonnage through the use of smaller-diameter pipe amounts to 31% in a typical 10,000-ft. hole. He adds, however, that there has been some reluctance in accepting the slim hole in areas where previous hole trouble has been experienced.

A Texas contractor points out that a slim-hole rig is not as expensive as a conventional rig. A slim-hole rig rated for 8,000 ft., for instance, would take 300 hp., whereas the conventional rig would take 600 hp. Then, too, slim-hole rigs use smaller blocks, mast, and hoisting units.

"An entire slim-hole rig can be mounted on trailers," he adds. "It costs more, but can save money. However, you have to have enough moves to make it pay."

A trade association official says that slim-hole work is possibly the biggest effort now under way to get prices down. He says that 100-mi. moves with a split trailer rig can be done with nine loads, as against 38 loads for a conventional rig. Savings here can range from $3,500 to $7,000.

MOBILITY SAVES VITAL CASH

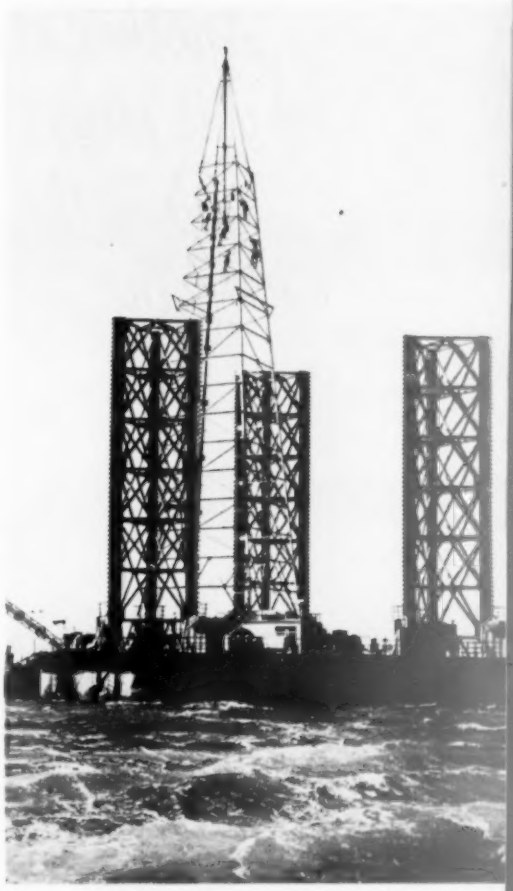
Transportation of equipment and rig-up time are other fronts on which drilling contractors are striving to make operations as efficient as possible.

E. F. Shields, vice-president of sales, Ideco, Inc., says: "The most significant changes with respect to drilling equipment—except for a major technological breakthrough—could, and should, come in the streamlining of equipment as far as moving, rigging up, and tearing down of a rig is concerned. In such improvements, more can be gained in the hydraulic end than in the hoisting end."

J. U. Teague, speaking as president of Columbia Drilling Co., says this: "All of us are very much interested in unitizing our rigs to make them more portable. It is essential to cut down on transportation costs every way we can. A contractor who can make a move for $1,000 has a 25¢-per-ft. edge on an 8,000-ft. hole over one who must pay $3,000 to move his rig."

One Oklahoma contractor has found it cheaper and more efficient to move all of his rigs under contract transport. Another contractor has cut moving costs by concentrating payloads, and eliminating as many as 100 units of equipment and material on one rig.

Mobility is particularly important to the service contractors, whose



LESS EXPENSIVE than the fixed platforms Arabian American Oil Co. used for developing its offshore Safaniyah field is this R. G. LeTourneau mobile drilling platform, now working at Manifa, in the Persian Gulf.

COST-TRIMMING is being pushed by service and supply companies, too. Halliburton Oil Well Cementing Co. got this straddle carrier to replace five flatbed trucks at two Duncan, Okla., plants. Company paid for carrier with labor savings, and cut capital investment by $22,000.

PLAN '59 CONTINUED ▶

Another reason why it pays to buy the pipe with the...

Orange Bands

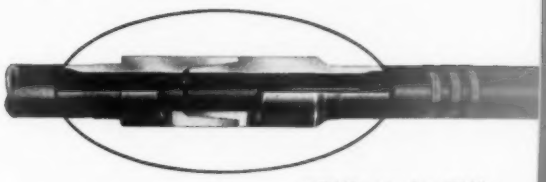
PERFORMANCE PROPERTIES AND SETTING DEPTHS

LIGHTWEIGHT GRADE E DRILL PIPE

SIZE (OD)	INCHES	2⅞"	3½"	4"	4½"	5"
Weight*	Lb./Ft.	6.85	9.50	11.85	13.75	15.0
Wall Thickness	Inches	.217	.254	.262	.271	.296
Tension Data (Minimum Values)						
Load at Minimum Yield	Lbs.	135,900	194,270	230,760	270,030	328,070
Equivalent Length	Ft.	19,840	20,450	19,480	19,640	21,870
Collapse Data (Minimum Values)						
Collapse Pressure	PSI	8,380	8,080	7,080	6,290	6,140
Setting Depth (S.F. = 1⅛)	Ft.	14,900	14,370	12,590	11,180	10,920
Internal Pressure at Minimum Yield	PSI	9,980	9,600	8,660	7,900	7,830

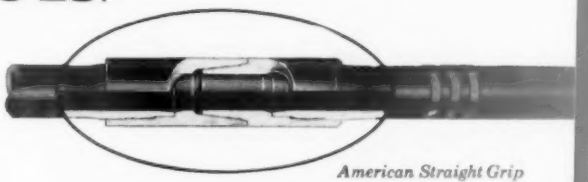
*Tentative API Weights

YOUNGSTOWN LIGHTWEIGHT DRILL PIPE



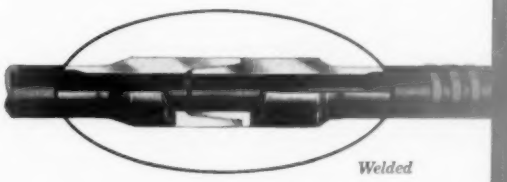
API Counter-bore Weld

Extends drilling depth, reduces hoisting loads 25% —with your present rig



American Straight Grip

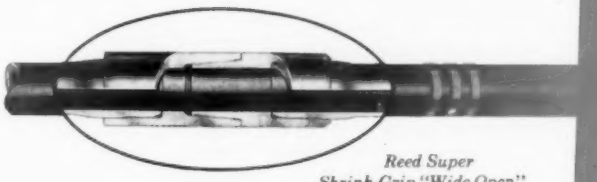
Now, Youngstown provides a lightweight drill pipe that will substantially extend your bidding range. You can bid and *get* those deeper drilling contracts—without any changes in your present rig.



Welded

You get more rotating hours with this Orange Band pipe. From ore through final inspection, it is manufactured to rigid drill pipe specifications . . . not a tubing substitute.

On a 10,000-foot hole, a string of 4½″ lightweight drill pipe is 18½ tons lighter than 4½″ regular drill pipe—because it's 2.85 pounds lighter per lineal foot. This means longer drill strings *without increased weight.*

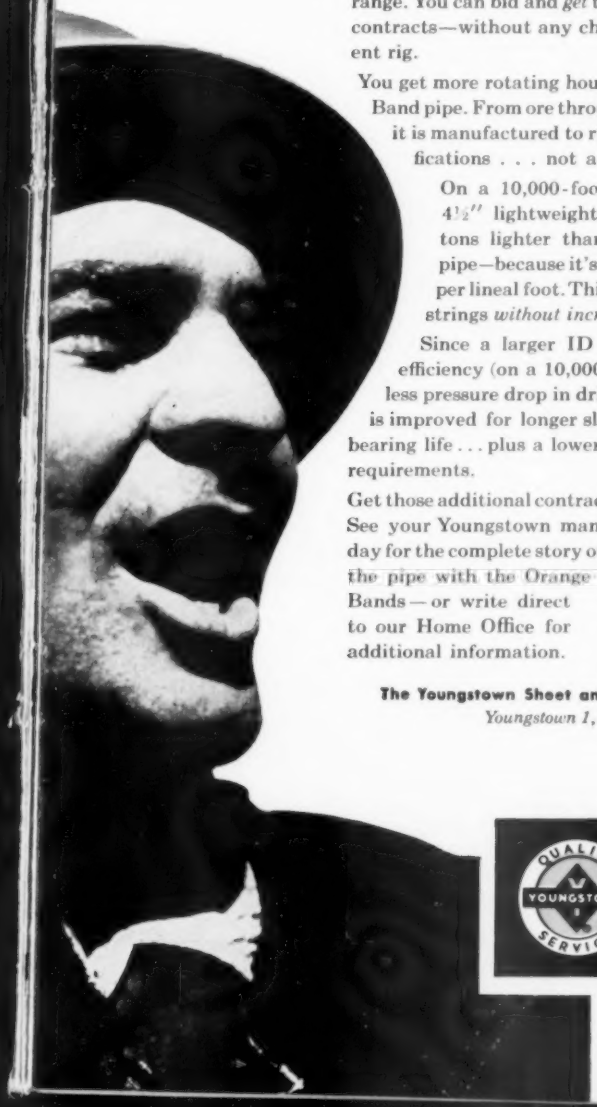


Reed Super Shrink-Grip "Wide Open"

Since a larger ID is used, hydraulic efficiency (on a 10,000-foot string, 16.7% less pressure drop in drilling fluid column) is improved for longer slush pump rod and bearing life . . . plus a lowering of horsepower requirements.

Hughes Seal Grip

Get those additional contracts now. See your Youngstown man today for the complete story on the pipe with the Orange Bands—or write direct to our Home Office for additional information.



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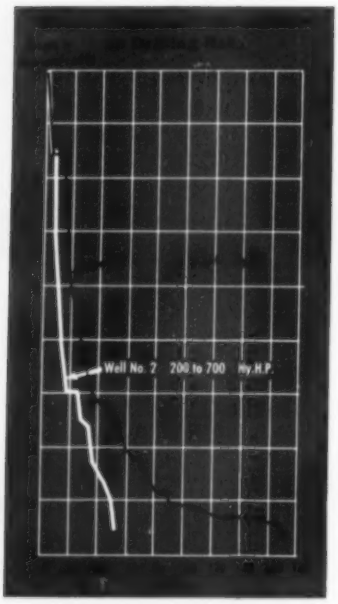

ELECTRONICS is advancing fast in the oil fields. Here an engineer with Southwestern Industrial Electronics Co., one of the Dresser industries, checks a GeoData processing center.

Modernization Overseas?

In foreign oil, modernization is another way of saying expansion. Obsolescence is uncommon for two reasons: (1) the oil industry abroad is young, with most facilities built since World War II, and (2) oil men are concentrating on building more capacity, to keep up with climbing foreign demand.

profit-and-loss ledger may depend entirely on the ability to set up and move rigs more quickly than competitors.

DRILLING AUTOMATION CAN HELP

There are other approaches to modern drilling—such as automatic operation—that can contribute to efficiency.

One California major has gone to automatic controls on four rigs. This company believes these units maintain a more even load and give better penetration. More power tongs also are being used by this major.

C. T. Whitney, vice-president and general manager, Coastal Drilling Co., Bakersfield, Calif., says one of the steps his firm has taken is the "streamlining of our rigs by unitizing our mud systems and mud tanks, cutting rig-up time in half. This unitization was carried out by installing mud, water, fuel, and accumulator lines into the mud tanks, where possible, so as to permit movement as a unit."

Automatic power slips and power swivels also are getting increased attention from contractors.

Use of diamond bits also is increasing, with much of this increase due to deeper drilling. Such bits also are being tested on turbodrills, with one newly developed type reportedly showing up much better than any bit yet tested.

A Texas contractor sees a bigger future for flexible, electrical rigs. Commenting on electrical drive, this contractor says maintenance is less, speed and torque control in the rotary table is better, and there is less fuel consumption, than with mechanical drive. "Electricity gives more power to the hook," he says "and permits a heavier load off the hooks."

The use of jet bits and improved hydraulics are considered by many contractors to be important areas for savings. One major has developed a new surfactant mud that is particularly good for very deep drilling—below 16,000 ft.—where temperatures can be in excess of 400F. And Milton Rosenberg, of Gulf Research & Development, told the Society of Petroleum Engineers, AIME, last month in Houston about an extreme-pressure lubricating additive for muds that prolongs the life of bit bearings. He cited a case in which $12,000 was saved in bit costs and rig time in drilling to 4,600 ft.

Air and gas drilling, where practicable, offers another approach to more efficient, cheaper operations. Any sharp upturn in this development could find contractors scrambling for equipment, much of which is suited only to such operations and cannot be cannibalized from other rigs.

NEW TOOLS AID EXPLORATION

In the field of exploration, some of the biggest modernization advances are being made in the growing use of magnetic tape, and in the adoption of other advanced geophysical tools and methods.

One major reports the process of converting conventional seismic recording equipment to magnetic tape has reached the 60% mark, double the total of only three years ago. Service companies are moving particularly strongly in this direction, too.

Since there is increasing attention being given to the hunt for deeper oil-producing horizons, emphasis also is turning to geophysical equipment that can provide more accurate mapping. There have been many such improvements in geophysical equipment, and they are virtually must equipment for service companies, or for operators who conduct their own exploration.

Extremely sensitive gravity meters and magnetometers also have been developed. Some of these were described at the recent annual meeting of the Society of Exploration Geophysicists, in San Antonio. One new gravity meter is so sensitive that it can measure the tides in the solid rock of the earth. Another gravity meter has been developed that can be mounted on a ship and make continuous recordings as the ship sails along its course.

PLAN '59 CONTINUED ▶

Should your Mechanical Superintendent influence heat exchanger design?

Question: What can Mechanical Superintendents contribute to the design of quality process heat exchangers?

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Working with their Engineering Departments, Mechanical Superintendents can offer . . .

. . . information on the fouling characteristics inherent in a specific application

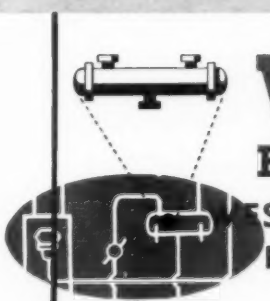
. . . mechanics of easier physical handling of each exchanger during cleaning and inspection

. . . practical recommendations on the selection of metals

. . . advice on the desirability of paralleling exchangers for more efficient operation and lower maintenance

Reduced maintenance with a minimum of downtime has become a characteristic of every Western heat exchanger, by augmenting Western's own knowledge of operational problems with the experience of our customers' Engineering and Maintenance departments.

From design to fabrication, quality and satisfaction is designed into Western heat exchangers.



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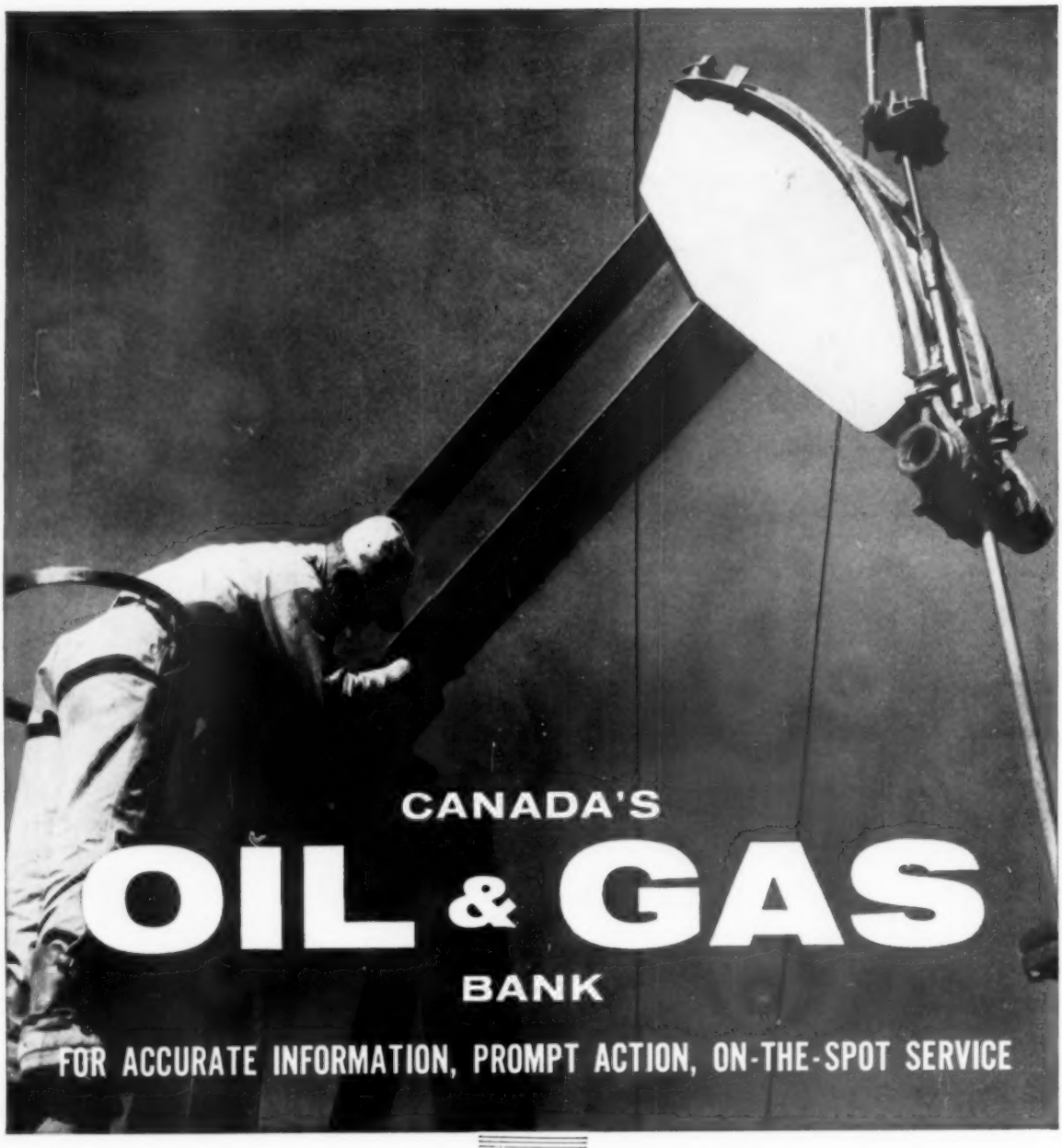

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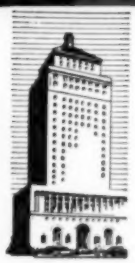
In addition, the Royal maintains a special Oil and Gas Department, staffed by experienced "oil bankers," which is exceptionally well organized to supply current information and helpful guidance. This department issues Oil and Gas bulletins containing current information and statistics that are basic to the Canadian industry. For an up-to-date list of bulletins, write The Royal Bank of Canada, Oil and Gas Department, 409 Eighth Ave. W., Calgary, Alta.



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'59 PRODUCTION

Biggest Savings Will Come with Automatic Leases

To shave the cost of producing crude, operators will place heaviest stress on oil field automation and electrification.

The steadily rising cost of production—coupled with lower crude prices in many areas and lower demand generally—is making operators more cost-conscious than ever.

The cost of producing one barrel of oil is more than $1, compared with 70¢ in 1948, and 43¢ in 1944. This is exclusive of exploration and development costs, which have shown comparable cost increases.

This upward cost spiral has been made more acute by the drop in domestic production this year. With so much investment tied up in fixed expenses, an operator's per-barrel costs rise when his production drops. Instead of a payout in six months, for instance, an operator may have to wait 10 or 12 months, or more.

The cost-price squeeze has forced operators to look to new ways of cutting costs. The newest, most efficient equipment is one obvious answer. However, the producer does not usually replace existing equipment on developed leases, except where the leases have sufficient productive life remaining to warrant installation of modern equipment.

But when it comes to installation of equipment for newly discovered or newly developed pools, operators are quick to turn to the latest available equipment and methods. This includes automation, electrification, new well-completion tools and methods, and corrosion-proof or corrosion-resistant equipment.

AUTOMATIC LEASES IN SPOTLIGHT

Automation of lease facilities has the greatest near-term potential for cutting production costs.

Nearly all producers agree that automatic lease operation and automatic custody transfer offer the greatest incentive for modernizing present facilities.

Completely automatic operations were put into experimental use only three years ago. These include not only automatic production, testing, and flow control, but automatic transfer of the crude from producer to pipeline. More than 100 such systems are now in operation. This is more than triple the number a year ago, which, in turn, was triple the number in existence the year before.

These units have assured operating and accuracy success where comparatively large volumes of production are handled. With respect to economics, the breakeven point is about 250 b/d for a meter system, and about 600 b/d for a dump tank system (PW—Apr.4'58,p11).

There is every indication that a breakthrough has come in the development of an automatic system for an individual well (PW—Jul.25 '58,p20). Humble has developed a small, skid-mounted unit that has oil, water, and gas separation facilities, as well as elements to provide for automatic custody transfer of oil and gas.

Although mounted on a skid measuring only 4 ft. by 7 ft., Humble's Harry Pistole and Martin True report, "the unit will perform all of the useful functions of a standard tank battery with pipeline connection. This assembly, even custom-fabricated, still costs less than half as much installed as the conventional battery which it replaces, yet it is more portable than a pumping unit."

The Humble unit also is designed so that it might well become the heart of a completely automatic, unattended lease operation. Pistole and True say packaged units of this type in two or three sizes should provide adequate selection to meet the anticipated production load of any lease.

The unit already built is capable of producing 300 b/d, which makes it suitable for the vast majority of wells in the country. A similar unit is reportedly being built by another company.

SMALL A.C.T. unit designed by Humble for automatic production of an individual oil well.

AUTOMATIC SWITCHING of a well into test, to record pertinent data on instruments, is accomplished by this Shell Oil equipment in Four Corners.

PLAN '59 CONTINUED ▶

43 WELLS feed into this central battery of Gulf Oil Corp. ACT installation in West Texas.

ACT Costs and Savings

	50 b/d	100 b/d	200 b/d
Cost of meter ACT installation including one day's storage	$5,500	$6,000	$6,500
Cost of manual battery, with four days' storage	$2,000 (two 100-bbl. tanks)	$3,000 (two 200-bbl. tanks)	$6,000 (four 200-bbl. tanks)
Direct additional cost for ACT	$3,500	$3,000	$ 500
Savings to pipeline by connecting, strapping, calculating tank tables, etc., for one tank instead of two or more tanks	$ 100	$ 100	$ 300
Total net additional cost for ACT	$3,400	$2,900	$ 200
Savings to pipeline by making one run ticket per month rather than one per tank, assuming a cost of $5/run ticket and deducting $10/mo. for meter proving	$60/mo.	$60/mo.	$135/mo.
Value of vapor savings to producer assuming 0.2° API gravity increase (0.5% volume increase)	$20/mo.	$40/mo.	$80/mo.
Payout from producer savings alone on direct additional cost	14.6 yr.	6.2 yr.	0.5 yr.
Payout from total pipeline and producer savings on Total net cost	3.5 yr.	2.4 yr.	0.1 yr.

Pistole and True note that the unitized production facility, with its automatic coding and well-handling procedure, "should largely eliminate the last of the routine manual and clerical operations associated with producing and accounting for oil. Certainly such automatic routing of production data on the lease will further open the door to complete machine accounting for production. If even ten minutes of clerical time can be saved per run ticket, the saving becomes impressive considering how many run tickets are necessary to sell the annual U.S. oil production of 2.5-billion to 3-billion bbl. If each ticket totaled as much as 500 bbl., the savings would be a million clerical manhours per year, without consideration of similarly large savings in pumper and gauger time."

This development could lead to further savings if units are fabricated on a production-line basis, so that lease facilities become unitized shelf items, and custom plumbing is eliminated.

Modernization through automation is also featuring increased use of electronic computers, for all kinds of production problems. The two broad areas getting attention: data processing, in relation to mechanization of crude oil accounting problems, royalties, production statistics, and similarly routine operations; and the computing end, relating to engineering calculations, whether dealing with reservoirs or actual operational problems.

ELECTRIFICATION WINS FAVOR

Many operators say that a switch to electrified equipment—particularly on low-horsepower pumpers—offers opportunity for real savings. One of Shell Oil Co.'s development engineers, W. A. Harthorn, says a switch to electric motors for pumping units is particularly advantageous when requirements call for 25 hp. or less, as in many of Shell's California fields. "Electric motors enable better control of pumping operations than gas engines," he adds. "Operating costs are more economical too. About all you have is the power bill to pay. We've been going in heavily for such switches in the past year or two, and we'll continue to do so."

"A few years ago," says Harthorn, "we might have had one electrician and 40 pumpers. Now we have 40 electricians and one pumper. At the same time, we're improving the productivity of the individual, and reducing back-breaking labor."

Electric motors are also advantageous in such areas as the Four Corners, where wells may be many miles apart. But where wells are close together, say some oil company officials, it's still cheaper to use gas engines.

Another major company has electrified four of its gas-oil separator plants, along with the pump stations. This major finds the change is resulting in lower costs, and permitting development of remote control.

Cities Service is expecting savings of at least $56,000 a year in its Ray pool, in Kansas, because of a shift to electrification, with much of the saving resulting from reduced maintenance. The company installed 145 electric motors, each equipped with time clocks for interrupted operation. Cities Service is one of the heaviest users of electric power in the oil industry, and has increased such use by more than 400% since 1950. It now has more than 2,000 wells on electric operation. Surplus horsepower has been reduced more than 32%, at a saving of over $100,000 in this category alone.

Improved artificial lift and better completion and testing methods also offer important savings to producers.

In recent years, lower investment, operating, and maintenance costs have resulted through the proper sizing of pumping units to known well requirements, and by use of retrievable gas-lift valves and free-type subsurface hydraulic pumps. The trend to "retrievability" is now being supplemented by a trend to miniaturization.

The equipment and techniques developed for wells with conventional 2-in. and 2½-in. tubing have generally proved adaptable to the smaller

tubing of slim-hole or dual wells. A 2⅞-in. well can be rod-pumped without tubing. If necessary, gas can be vented through hollow sucker rods, or 1-in. tubing can be used for sucker rods.

Harder metals that have been developed in the past year, says one manufacturing representative, coupled with other new materials and better engineering on fluid-flow design, "are good arguments to buy a new pump."

With stripper wells, he adds, "we can show a very nice saving in operational cost by taking conventional beam units out and replacing them with hydraulic units." One California major did just that, removing beam units from one lease to a new field and replacing them with hydraulic units, and came out ahead financially. In other cases, the economics favor beam units.

Smaller-diameter wells and associated equipment are reducing the cost of completions. A 7,500-ft. tubingless completion using 2½-in. casing offers a potential saving of 43% in tubular goods alone when compared with a conventional well having 5½-in. casing wtih 2-in. tubing string.

Slim holes also cut the cost of well servicing and workovers.

Proper completion fluids and sand control in such slim holes, or tubingless completions, can also extend the life of flowing wells and minimize early failure of artificial lift equipment from corrosion.

Greater use of corrosion-resistant equipment—such as aluminum or plastic pipe—can also be a good cost-cutting practice. Use of chemical corrosion inhibitors is growing.

Big improvements in bottomhole heaters also point to increasing use of these units to boost production.

HYDRAULIC PUMP made by Axelson Manufacturing Co. has double piston, reciprocating two sucker rod strings, for dual-zone production of well.

SECONDARY RECOVERY WILL BOOM

The big surge in secondary recovery shows every sign of continuing at an even faster clip in 1959, thus taking a larger share of modernization budgets.

Waterfloods remain the prime form of secondary recovery, but there are increasing efforts in miscible phase displacement and in-situ combustion.

The growth in waterfloods is underscored by figures released a few weeks ago by the Texas Mid-Continent Oil & Gas Assn. TMOGA estimates that Texas now has 888 secondary recovery projects in operation. Of these, the great majority are waterfloods. Nearly 30% were started in 1956 and 1957.

Closely allied with the increasing attention being given to secondary recovery are related developments in fracturing, acidizing, and perforating, all of which contribute in some manner to improved secondary recovery, either through increased production or increased injection rates.

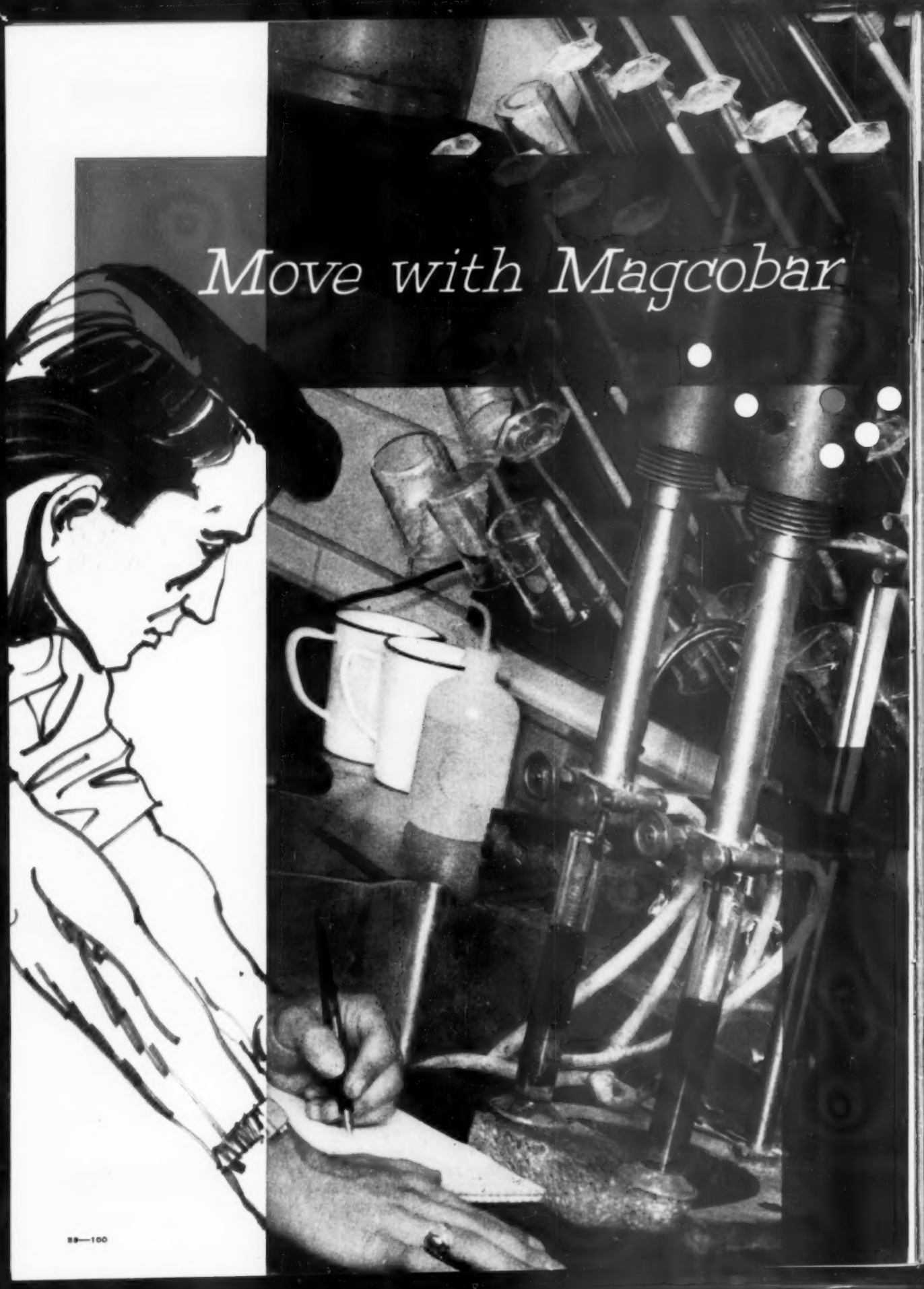
The scope of secondary recovery operations:

- Shell Oil Co. is investing $3-million in a thermal recovery project in Venezuela.
- Aramco is building a $29-million gas-injection plant to maintain reservoir pressure in the Ain Dar area of the Ghawar field, in Saudi Arabia. This plant is scheduled to go into operation early next year. The company also is increasing water-injection facilities and expanding capacity of a gas injection plant at Abqaiq, also in Saudi Arabia.
- Creole Petroleum Corp. also is starting construction of a big gas-injection plant at Lake Maracaibo, Venezuela, to run its over-all investment in such facilities to $125-million.

Similarly heavy expenditures are being mapped for secondary recovery projects in the U.S. and Canada. Such projects generally require conventional equipment, though air compressors play a more important role in thermal recovery projects. Pumps, however, are the major unit generally needed in secondary recovery programs, and demand for these is likely to be heavier than usual next year.

HEAT PUMP for bottom-hole use, designed by H. D. Bowman and tested successfully by Quaker State Oil refining, underscores equipment gains.

PLAN '59 CONTINUED ▶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'59

Refiners Eye Higher Octanes And Lower Costs

Dollar-leaks are steadily worsening for the oil companies that are trying to get by with outdated processes and equipment.

Refinery product specifications have increased and process and equipment design has improved so much in recent years that any refiner with equipment ten years old or more may be penalizing his operations greatly.

One of the big troubles with refining equipment is that it often outlives its economic usefulness. There are still some old shell stills and thermal units in use that are over 30 years old. These old units require more maintenance and operators, and are thermally far less efficient, than modern units.

For example, the number of operators needed for a catalytic cracker built today would be one-third to one-half less than for one designed 10 to 12 years ago. And, in the past decades, at least half of the intermediate tankage capacity once considered necessary has been eliminated from many refineries.

Ten years ago, it was considered good practice to shut down a crude unit every six months. Now, in modern crude units, with their increased corrosion protection through better designs and materials of construction, the recommended onstream time between shutdowns has doubled.

Smaller and older refineries face an increasingly bleak future of spiraling operating and maintenance costs and encroaching obsolescence. Changing technology and price structures are making the profit picture dark for the refiner who has fallen behind in modernization.

Operating costs for many older refiners are well over a dollar a barrel. Yet the current refinery spread (the difference between the cost of crude and the selling price of products) is well below its traditional $1 a bbl.

The particular factors that hurt most today are the high costs of operating labor, maintenance, and fuel. These are accentuated by a continuing "evolutionary" expansion of refinery capacity through duplication of existing units in the same refinery. The result is that older refineries often have many small units, where optimum economical operation requires just one or two larger units, according to N. L. Dickinson, manager of the refinery plans division for M. W. Kellogg Co. And a multiplicity of processing units means duplication in operating and maintenance costs.

Changing price structures have also had their influence on refinery design. Many units were designed and built in the days of 5¢ natural gas as fuel for furnaces and heaters. With such cheap fuel, designers could not justify the extra heating surface needed to exploit all of the potential heat energy from the gas. Hence, furnaces and heaters with only 50% thermal efficiency were tolerated. Today, on the other hand, good design calls for at least 75%-efficient furnaces at today's natural gas prices.

QUALITY FIGHT in refining is fought with units like new Gulf oil 26,000 b/d cat reformer at Port Arthur.

The refining industry has undergone a constant, almost revolutionary, modernization since World War II. "You keep thinking you're through, but you just don't get through," says a major-company refining official. "You never know what kind of unit you'll be spending money on in the future. They're working it out now in the research lab."

Even so, and even though everyone will pay lip service to the desirability of modernized, economically operating equipment, it is easy to "put it off till tomorrow." Now, with the recession-born "hard facts of life" still important, refiners are finding many small, but significant avenues for cost-cutting.

Prices today are right for modernization projects. As an example, one of the big engineering service companies reports that manufacturers' quotations for heat exchangers are at least 20% lower than a year ago.

PLAN '59 CONTINUED ▶

International Petroleum Exposition

May 14-23 **1959** • Tulsa, Oklahoma, U. S. A.

Night view of IPE with Tulsa Skyline

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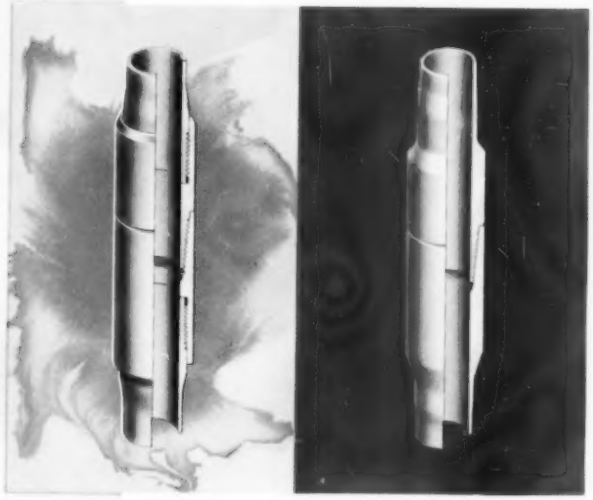

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Alloy heat exchangers are said to be selling for less than $4 a sq. ft.—a price lower than at any time in the past several years.

MOST DOLLARS ARE FOR UP-DATING

Of the $588-million earmarked for refinery construction projects for the coming year (page 15) most will be spent to help oil companies make products of a competitive quality at a competitive cost. Except for isolated cases, capacity expansion will be incidental to modernization.

With U.S. refineries running at an average of 82% of capacity, it will be several years before a general, national expansion in capacity is required. But meanwhile, three basic factors are goading refiners into large modernization expenditures: ever-tightening product specifications, rising costs, and the availability of more technical knowhow for refining processes and equipment.

Octane ratings, though somewhat stabilized at the moment, are expected to rise as high as 110 within the next decade (compared to around 100 to 102 for today's superpremium motor fuels). And oil companies are even finding customers more quality-conscious in their purchases of heating oils, with low sulfur content an increasingly important sales point.

Modernization expenditures of $30 to $70 per barrel of daily processing capacity per year are reported by most of the oil companies releasing figures to Petroleum Week.

One Southwestern major reports that, beginning in 1956 and continuing in 1959, it will have spent about $30 per b/d per year to modernize its processing equipment for product improvement and to meet the continuing rise in octane numbers. Another Southwestern major says that its continuous modernization capital expenditures in the field of manufacturing have been around $30 to $50 per b/d per year over the past few years, with no indication that this will slack off significantly in the near future.

One of the largest of the oil companies says that for the next three years, about two-thirds of the company's manufacturing department capital expenditure budget will be for "improved quality and upgrading products," with any capacity expansion being incidental. Magnolia Petroleum Co. reports that both refining and marketing have been receiving extensive attention in the past two years, and that this is likely to continue for some time to come.

And in the Mid-Continent area, a refiner has just completed a five-year forecast of capital expenditures. The company estimates that it will spend $71 per b/d per year for the five-year period beginning in 1959. Most of the money, the company says, will be spent on equipment that will improve product quality to meet competitive conditions.

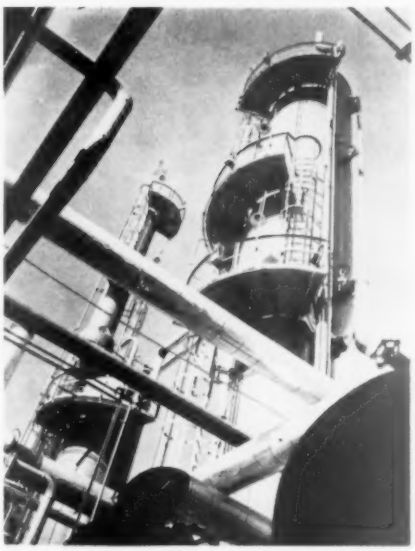
A little farther west, another company says that spending for refinery modernization, as contrasted to expansion, will increase in 1959.

Standard Oil Co. of California was cautious at the beginning of the current recession. A company spokesman said, "We backed off a little last fall and took a 'wait and see' attitude for a few months. But we reversed our position this spring by announcing we would build a new catalytic cracker at Richmond, Calif. More than half of our 'modernization' money will go into this project. Any slowdown in our company was of short duration."

By the end of 1959, practically all of Standard of Indiana's processing equipment built before World War II will have been retired, according to R. C. Gunness, the company's executive vice-president.

The emphasis at Standard of Indiana is on modernization, rather than expansion. The company's refinery capacity since World War II has doubled. Now, company officials stress, additional capacity is only incidental to more efficient, more economical operation. Better products, at less cost, are the No. 1 aim.

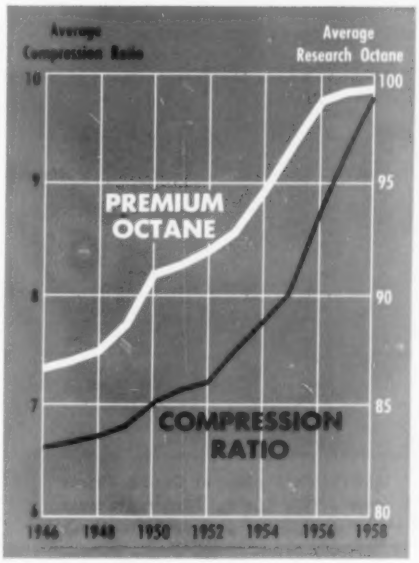
The company's modernization has meant elimination of considerable processing equipment. In the manufacturing end of the business, the



ULTRAFORMER of Indiana Standard, one of 14 the company has in use, for a front spot in the octane race.

The Octane Race

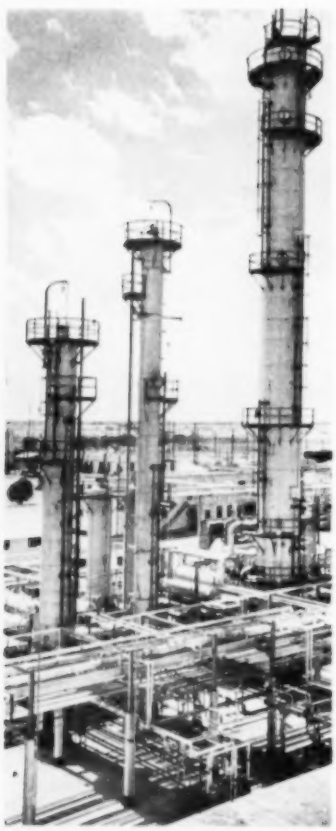
(or why refineries need modernizing)



PLAN '59 CONTINUED ▶

company has eliminated acid and candle making. The company has also consolidated the manufacture of smaller-volume products at a very few of its plants. For example, manufacture of special naphthas has been discontinued at Whiting, Ind., and concentrated at Wood River, Ill.—while manufacture of lube-oil base stocks made an opposite switch.

LUBE PLANT at Magnolia Petroleum's Beaumont refinery is good example of automated modernization.



ALKYLATION plant of Cosden Petroleum at Big Spring, Tex., represents way of building automotive octanes formerly reserved for avgas output.

MORE MONEY FOR OCTANES A 'MUST'

A large proportion of 1959 modernization work announced by refiners is centered around one big problem—octanes. Without the modern processing equipment to meet octane competition, few refineries can stay in business.

The leading process emphasis for these increased octanes is modernized catalytic reforming. However, catalytic cracking, alkylation, hydrogen processing, and perhaps isomerization are either already shouldering part of the burden, or being considered seriously by octane-hungry refiners.

In spite of the newness of catalytic reforming (mostly since 1950), many of the older units are being outmoded rapidly because of the octane race. However, cat reforming will continue to be a major octane-maker, and it offers a wide-open field for modernization.

According to the spokesman for a major engineering company, it is fairly safe to say that any catalytic reforming unit that has been on stream at least two years (which means that it was designed about three years ago) could very easily be a candidate for modernization.

Most of the catalytic reformers in use today were never meant to produce motor fuel with an unleaded, research octane rating higher than 90. This is far from adequate in many cases where superpremium gasolines are needed. The penalty for trying to operate these units at higher-than-designed octane output is shortened catalyst life, often to the point of making the operation uneconomical.

A good cat reforming unit designed for 90-octane operation according to the engineering firm's spokesman, should get more than 100 bbl. of product per lb. of catalyst when operating at design conditions. However, trying to push this same unit up to 95-octane could mean as little as 30 bbl. per lb of catalyst. In contrast, a modern cat reformer designed for 95-octane operation could be expected to produce 75 bbl. of product per lb. of catalyst.

Among companies reporting to Petroleum Week that they are placing heavy emphasis on octane modernization via catalytic reforming are Cities Service Oil Co., Indiana Standard, and Aurora Gasoline Co.

The main octane load for Cities Service will be carried by platinum-catalyst reforming. The company feels it can meet octane demands through 1959 this way. In addition, the company is designing all new cat reformers it installs to produce motor fuels of 95- to 97-octane (unleaded, research).

Standard of Indiana now has 14 Ultraformers in operation as part of its octane modernization program over recent years.

Aurora Gasoline has had cat reforming in its three refineries since 1949. The company has been active in increasing reforming severity over this period to keep abreast of octane requirements in the motor fuels market. And Aurora is now engaged in a program to increase severity further, which, if carried to completion, will cost the company at least $3-million during the next 1½ to 2 years.

Alkylation, only recently graduated from exclusive membership in the avgas field, is burgeoning as an octane-making process for motor fuels.

Alkylation was once thought to be too expensive to use in motor fuel production. But modern versions of alkylation processes are rapidly assuming major significance as producers of gasoline octanes. One in-

dustry expert predicts that total alkylation capacity will be well over 1-million bbl. by the mid-1960s, compared with only about 360,000 bbl. expected at the start of 1959.

Of the 1-million bbl. of alkylate, over 80% should wind up in premium motor fuels. This compares with a predicted use of slightly over 50% of total alkylate for motor fuels in 1960, and only a little over 20% reported in 1956.

HYDROGENATION IS A BIG 'COMER'

Hydrogen treating is "one of the biggest developments going on in the industry today," according to Humble Oil & Refining Co.

But Humble isn't the only refining company that is switching in a big way from acid treating processes to the use of hydrogen treatment for gasoline, heating oils, kerosine, solvents, lube oils, cat reformer and cat cracker feedstock, and cat cracker recycle stock. Gulf Oil Corp. says that the expanded use of hydrogen processing is a big factor in its modernization. Cities Service Oil Co. reports it is keeping a close watch on the hydrodesulfurization trend.

High octanes and the boom in catalytic reforming have combined to give hydrodesulfurization processes a substantial push forward, in spite of the relative newness of such processes on a large scale.

One big source of modernization is the addition of hydrodesulfurization units to pretreat catalytic reformer feedstock. These units not only remove sulfur, but also reduce other harmful materials, such as metals, oxygenated compounds, and nitrogen compounds. They also remove any hydrogen-unsaturation from the feedstock, which could be harmful to cat reformer operation.

Earlier cat reformers, designed to produce 80-octane product (clear, research), could tolerate a relatively large amount of sulfur without harming the performance of the platinum catalyst. Therefore, these units were built without hydrodesulfurizer pretreatment of the feedstock. However, operating for 90-octane and over requires that sulfur in the feedstock be reduced to negligible quantities. If this is not done, the catalyst suffers a suppression of activity, and iron sulfide scale often builds up on top of the catalyst bed, plugging the reactor.

Though pretreatment of cat reformer feedstock gave hydrogen-processing its first big push, hydrogen-treating has now branched out into many other refinery applications, and has become an effective weapon against air pollution and a producer of sulfur.

Home heating oils are one of hydrogen processing's more recent conquests. Such treatment removes sulfur, and thus reduces fouling and corrosion in the burners and chimneys of customer installations. Several companies are actively promoting hydrogen-treated home heating oils, and indications are that other companies are considering such a move in order to stay on a favorable competitive basis.

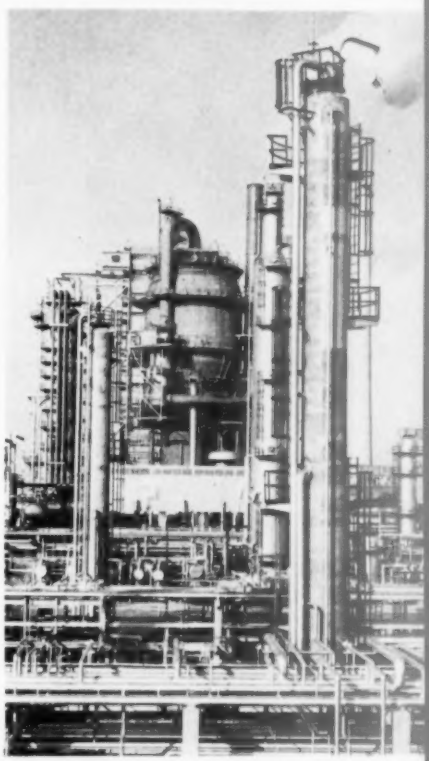
Hydrogen-treatment of gas oil from crude distillation towers reduces sulfur and heavy metals in cat cracker feedstock, and reduces carbon-producing tendencies, thus increasing the over-all efficiency of the cracker.

As an eliminator of sour-smelling, sulfur-containing gases going to the atmosphere, hydrogen-processing seems to be without peer. Not only does it reduce sulfur content to negligible quantities, but it produces a hydrogen sulfide gas that is easily converted into valuable sulfur.

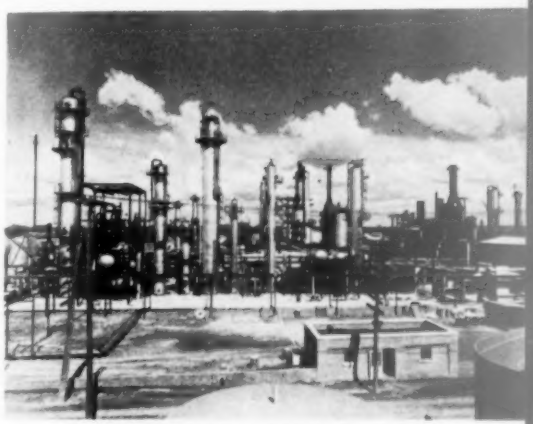
BIG ONES FOR LITTLE ONES

A very important modernization trend throughout the refining industry is the replacement of several small-capacity, parallel processes with one larger, more economical unit.

The use of many small refining units, when one will do the job, requires more labor, more maintenance, more auxiliary equipment. When the industry was much younger, 20 to 30 years ago, refiners did not know



BIGGEST CAT cracker in world, Orthoflow fluid cracking unit at Tidewater's Delaware City refinery, illustrates growing emphasis on size.

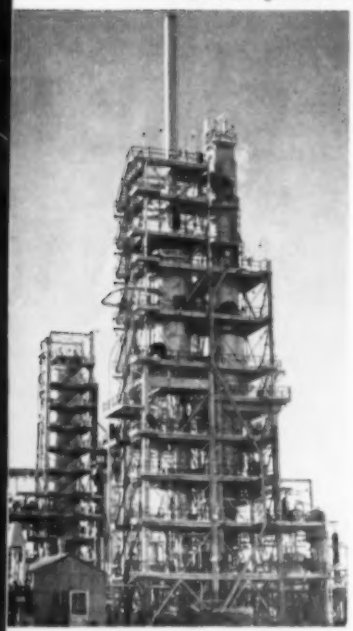


REXFORMER, a 6,000-b/d unit at Cities Service's Ponca City refinery, also shows trend to big installations.

PLAN '59 **CONTINUED** ▶

THERMOFOR cat cracking unit at Derby Refining Co.'s Wichita refinery, which has had extensive modernization.

FLUID COKER at Carter's Billings, (Mont.) refinery boosts profit by breaking down residual for conversion into gasoline and burner fuels.



how to build big units. If a 10,000 b/d refinery was needed, often it had ten individual 1,000 b/d batch stills.

But today, engineers and designers have greatly increased information on alloys and metallurgy. They can design safe units many times as large as in the early days, through better knowledge of how to cope with pressures or vacuums, temperatures, and corrosive atmospheres.

The newer refineries are capitalizing on the inherent economy of larger processing units along with the attendant benefits of ease of "unitization," reduction of intermediate storage, and general control simplification.

Though the trend toward larger units is real, it remains controversial as to just how big the units should be. The whole industry is watching with interest to see how well Tidewater Oil Co.'s daring "big-unit" experiment at Delaware City, Del., will succeed.

Other recent refinery projects, though somewhat more conservative in unit sizing than Tidewater's, are capitalizing on the benefits of larger units and a significant approach toward unitized operation (where the effluent from one process unit is pumped directly to the next unit without going to intermediate storage). Among these refineries are Esso Standard's refinery at Beloit, Cuba; Commonwealth Oil & Refining Co.'s at Guayanilla, Puerto Rico, Cities Service's at Toronto, Ont., and Sohio's at Toledo, Ohio.

Standard of Ohio says the old Toledo refinery processed 25,000 b/d with a total work force of 480 men, while the new 60,000 b/d refinery requires only 510 men. Sohio also estimates that the "integrated" construction of the new refinery reduced the cost of intermediate tankage and transfer lines about one-third, which saved the company more than $10-million in construction costs (and will save additional millions each year in operating costs). Further illustrating the advantages of integration within a refinery, one industry spokesman estimates that the average 50,000 b/d refinery circulates as much as 1.5-million b/d of fluids within plot limits—a very costly luxury as well as major source of lost process heat.

But a company need not await a new refinery to reap the benefits of process simplification and integrated operation. Executive Vice-President R. C. Gunness, of Standard of Indiana, says the company's refinery construction program is aimed at lowering costs by replacing older, smaller units with larger-volume, integrated facilities—particularly for crude distillation and cracking. And Cities Service and Socony Mobil are both active in attacking the simplification program via modernization projects.

COMPUTERS—WORKING GLAMOUR GIRLS

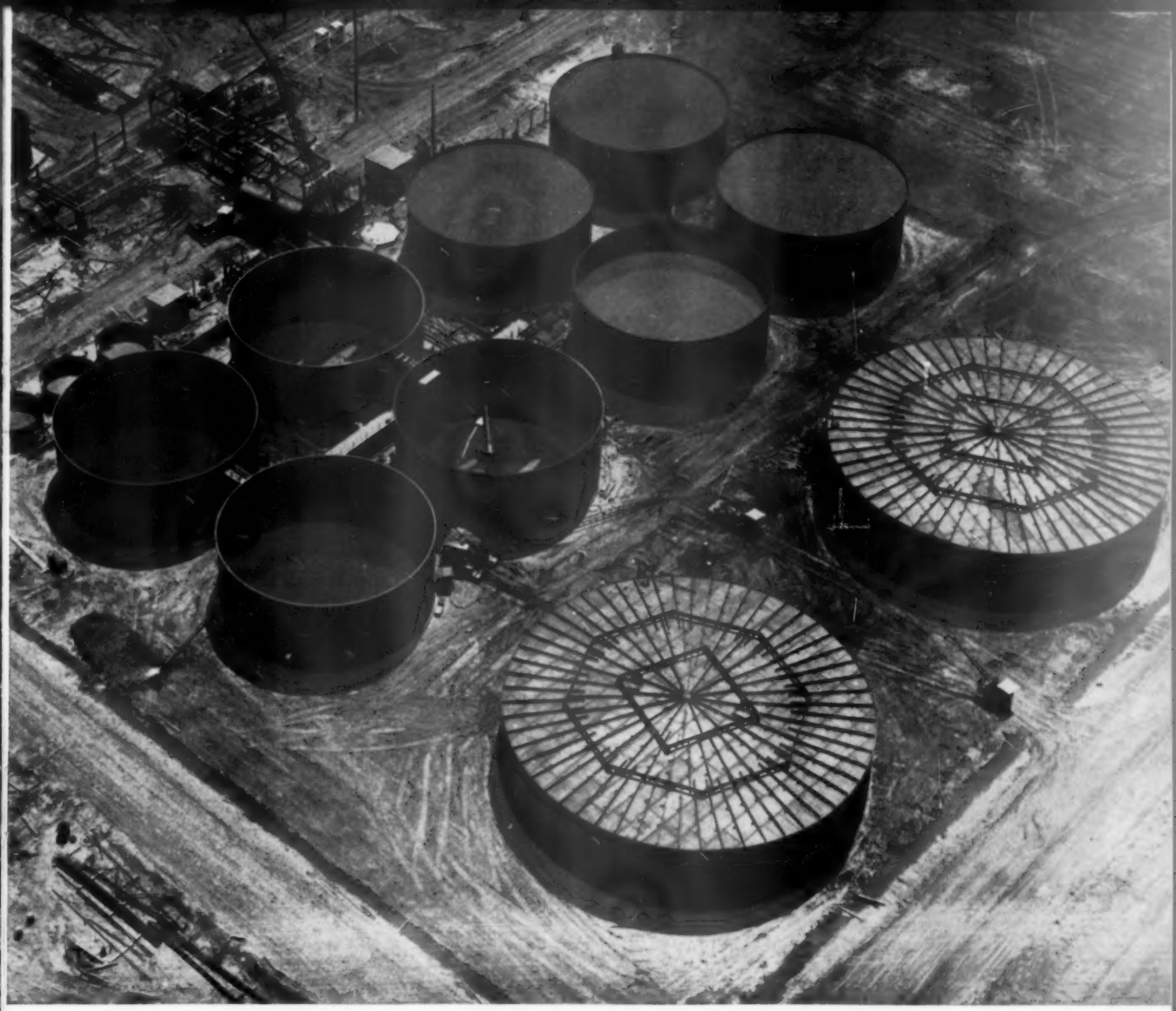
Until only recently, electronic computers were a novelty and the butt of very bad jokes. Now, practically every major refiner and a great many smaller ones either have modernized with computers, or plan to get a computer or rent computer time. Their known uses are legion, and new uses are still being found.

Computers assist refinery efficiency in many fields, from the simple separation of payrolls to actual control of entire processes. The machines are being used to determine optimum gasoline blends, to control requests for maintenance work, to order materials to replenish depleted warehouse stocks, to simulate actual refinery operation, to select crudes for refinery runs, to design equipment, to check operating conditions, to speed up refinery oil accounting, to schedule startup and shutdown procedures, and to handle many other applications.

And to help the refiner reap the benefits of computerized operations, there are many computer-making companies with digital, analog, and digital-analog systems available.

Speed, efficiency, accuracy, and hitherto "impossible" calculations become possible with a well-designed computer program. But having a

PLAN '59 CONTINUED ▶



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. . . part of major expansion at Port Neches, Tex. petrochemical plant at Jefferson Chemical. . . . special Graver cone roof design eliminates corrosion maintenance problems.

Conventional cone roof construction would not do for the two largest tanks above. Interior roof structurals could not be protected against corrosion from the 50% caustic to be stored. And so Graver designed the roof structurals on the outside, leaving the interior smooth for easy application of a corrosion-resistant coating.

Three tanks of this special design were built by Graver to answer the corrosion problem at Jefferson Chemical under order from Singmaster & Breyer, Inc., New York, Designers and The Fluor Corporation, Ltd., Los Angeles, Constructors. Also fabricated and erected by Graver were the eight open-top tanks above, used for slurries of raw and treated brine, for treating brine for cell liquor storage, as well as seven smaller open-top tanks and two solid nickel tanks.

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WHY ALKYLATE IS THE KEY TO CURRENT GASOLINE BLENDS . . .

The Oil and Gas Journal says, "Of the five typical high-quality blends which go into premium gasoline, alkylate is by far the best performer . . . more and more refiners are being pushed to include alkylate in their motor fuels. Heavy competition . . . is responsible for the new emphasis on alkylation."

	Research octane (RON)	Motor octane (MON)	Sensitivity (RON minus MON)	Road octane (Union town)
Alkylate	103.0	104.5	−1.5	107.5
Reformate extract	103.7	94.0	9.7	103.5
C_7 plus reformate	103.0	93.5	9.5	102.5
C_5 plus reformate	100.0	91.7	8.3	100.0
Catalytic cracked	99.0	87.5	11.5	98.0

Reprinted courtesy The Oil and Gas Journal (Aug. 4, 1958)

OVER 50% OF ALL POST-WAR HF ALKYLATION UNITS OPERATING IN NORTH AMERICA WERE DESIGNED, ENGINEERED AND BUILT BY TRECO*

The Refinery Engineering Company has designed, engineered and constructed more HF alkylation units than all other companies combined.

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Shell Oil Company of Canada	1500 BPSD
NCRA	1522 BPSD
Cosden Petroleum Company	2068 BPSD
DX-Sunray (Tulsa)	2470 BPSD
DX-Sunray (Duncan)	3500 BPSD
CRA	1106 BPSD
Anderson-Prichard Oil Corp.	2150 BPSD
Bell Oil & Gas Company	1000 BPSD
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Treco, with an outstanding record of fast refinery completion, can have your alkylation unit on stream QUICK. A telegram, telephone call or letter will bring complete information.

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The REFINERY ENGINEERING Company

FARMINGTON NEW YORK TULSA TORONTO

computer, and staffing and programming it, is not cheap. International Business Machines Corp., granddaddy of U.S. computer-makers, recognized the need for placing such a program within the reach of smaller refiners, and now has a plan to help them.

Just last month (PW—Oct.10'58,p34), IBM announced availability of its "IBM Proven Engineering Programs for Petroleum Refineries" package to all users of the company's 650 computer. The program package is aimed primarily at refineries with capacities between 20,000 b/d and 50,000 b/d. It contains program-card libraries developed and in use by larger oil companies.

According to IBM, proper use of the programs for refinery operation can benefit the refiner's operations appreciably. Development of these programs independently would require a highly-trained technician about five years.

A POTPOURRI OF DOLLAR-SAVERS

Technological progress in engineering, design, and metallury has benefited process and equipment efficiency greatly—opening the door to a multitude of dollar-saving modernization opportunities in most refineries.

Too often refiners become so concerned with large processing units and over-all refineries that they forget there are dozens of smaller modernization opportunities that can make a truly significant contribution to refinery efficiency and economy.

It is the combined effect of many of these small items, such as a better pump, a better seal, a new alloy, and many others, that has made possible spectacular improvements in refinery operation.

Auxiliary and off-site facilities around the refinery are often forgotten candidates for improved efficiency. Off-site equipment alone can account for 40% to 65%, depending on refinery complexity, of over-all plant investment.

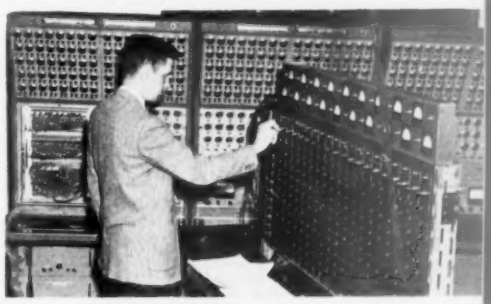
Items such as pump houses, lube oil blending, shipping, oil transfer within the refinery itself can be fruitful areas for cost-cutting by the use of inline blending and automatic analysis and testing, and by improvements in materials handling, packaging, boiler houses, oil handling, and water treating, according to Kellogg's N. L. Dickinson.

Indiana Standard is approaching this problem by using more continuous analyzers to maximize the yield of more valuable products and control their quality, according to executive vice-president Gunness. This is being done by using gas chromatography, continuous flash and end point analyzers, continuous viscometers, and proportioning pump blending equipment. Some of these instruments were developed by the company's own engineering research group to serve these specific purposes.

Magnolia is installing new materials-handling equipment, and recently it put a very modern lube blending and packaging plant into use at its Beaumont (Tex.) refinery. Various degrees of inline fuel blending are receiving attention, especially in the new refineries, such as those of Tidewater at Delaware City, Del., Standard of Ohio at Toledo, Ohio, Cities Service at Toronto, Ont., The Texas Co. at Anacortes, Wash.

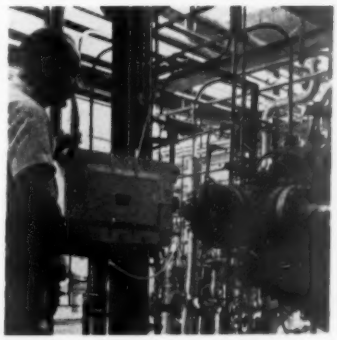
Even conventional items of refinery equipment have improved in efficiency and reliability in recent years. A partial list of such items, prepared by Carl Gamer of The Lummus Co., covers heaters, distillation towers, heat exchangers, pumps, piping, structures, and instruments.

Foster Wheeler Corp.'s R. M. Braca points out the advantages some refiners are gaining by using gas turbines for cat cracker air blowers to reduce the need for more steam-boiler capacity (for steam turbines). And, he says, there is the ever-present loss by default of expensive heat-energy around the refinery, because of failure to take full advantage of modern heat-recovery techniques, such as CO boilers, expanders, gas turbines, and heat exchangers.



ANALOG COMPUTER is used by Indiana Standard to improve refinery operations such as gasoline blending.

MODERN CONTROLS at Tidewater's Delaware City refinery include the latest data logging equipment.



TV CAMERA checking pilot light in Ultraforming catalyst regeneration process is example of equipment modernization by Indiana Standard.

PLAN '59 CONTINUED ▶

'59 TRANSPORTATION

Lower Unit Costs Are Main Target Of Oil Haulers

Automation and increased capacity of equipment are getting most stress as competing transporters streamline for profit.

A great deal apparently will be done in 1959 to modernize oil's varied means of transportation. As 1958 draws to a close, many companies are working up to a running start by looking over a wide range of equipment for new operating efficiency.

The latest McGraw-Hill forecast of U.S. capital expenditures shows that such spending in the transportation part of the oil industry will be roughly $354-million next year (page 15). And because stiffening competition has resulted in a more pressing need for increased operating efficiency, oil's transportation men will be using a substantial part of their 1959 capital budgets to modernize present facilities. The main objective: to move more oil for less money per barrel.

This will hold true in all phases of oil transportation. Recent technological advances have made available a supply of new equipment designed to handle the newer problems of moving crude and products while taking care of the perennial problems better than earlier equipment. Potential users—in pipelining, tanker operations, trucking, barging, or rail shipments—will be studying carefully the question of when to replace equipment already in use.

NEW METERS using an electronic flow-sensing element (above) or the positive displacement principle (below) offer high capacity, new accuracy.

PIPELINES LEAN TO REMOTE CONTROL

Probably the most eye-catching of all equipment developments in pipelining is the rapidly increasing use of remote-controlled pipeline stations. On older lines, automatic equipment is replacing the manned station at strategic locations, while some newer lines will have automatic equipment at all stations.

The automatic station has made its greatest inroads in crude and product lines, but gas transmission companies in increasing numbers are becoming convinced that it has important advantages for their operations as well (PW—Oct.3'58,p80).

Those who have gone or are going to remote-control stations list these advantages of such stations: reduction in operating costs through lower manpower requirements; reduction of initial installation costs by eliminating housing for operating personnel; increase in operating efficiency; and provision for central control over all stations from one dispatching point.

Humble Pipe Line Co. is a case in point. By redesigning its pipeline system in favor of more automatic equipment, the company is now able to handle greater volumes of crude with 2,000 employees assigned to such work than it did in 1950 with 2,800 employees.

This reduction has contributed very significant benefits, the company feels, with an extremely rapid payout.

One oil company transportation executive summed up his company's feelings on remote control this way: "The remote-control systems themselves don't need much improvement. They're fine now. But they're still pretty expensive. So we feel—and we think other companies agree—that the unmanned pump station will come in mostly through building of new lines."

The coming of the automatic station is making it necessary for its users to decide on the equipment to be used with such stations. Choice of communications equipment, for instance, is all-important. And microwave radio is getting a good deal of support.

The head of one pipeline network contemplating increased use of automatic stations says, "We rate microwave as one of the most important advances in pipeline communications. It seems to us to be the communications system most adjustable to the automatic system we have in mind. You can carry any number of readings. And there's no need for stringing wires. Don't forget, your remote-control system is only as good

as the system that relays the operating conditions from the pump station to the control center and then takes instructions back."

Another pipeliner adds, "Microwave systems are especially important where pump-station data must be sent over difficult terrain. But don't overlook the other systems that will help as remote-control data carriers —leased wires, especially."

Several companies have recently installed microwave systems on pipelines: Magnolia Pipe Line Co., Sinclair Pipe Line Co., and Four Corners Pipe Line Co., among them.

Other auxiliary equipment for unmanned stations is also coming to the fore.

Ohio Oil Co. feels its engineers have scored an important gain with the development of a "fluid drive" method of controlling pressures at automatic pumping stations. The broad variations in pressure and flow in product pipelines mean that a good deal of power is often wasted. But Ohio Oil's fluid drive between the pump and the motor of a pumping unit (instead of the conventional throttling control) has resulted in a 25% saving in power.

A major-company representative makes this point about new auxiliary equipment for the unmanned station: "Along with the increasing use of remote control, you can expect to see an increasing use of motor-operated valves."

PRIME MOVERS UNDER STUDY

Developments in pumps and compressors are attracting wider attention among those who plan and operate crude, products, or gas lines.

A recent study for crude and product pipeliners (PW—Sep.19'58,p86) showed that electric-motor pumps still offer lower original and maintenance costs but, on the average, rank behind gas turbines and diesels in cost of energy.

"The gas turbine for pump stations is looking better today," according to one pipeline planner. Trans-Arabian Pipe Line Co. has put six gas turbines in service along its 750-mi. Tapline. A few of the pumping units are even portable (PW—Apr.4'58,p32).

The head of a midwestern major's technical purchasing department singles out new gas turbines for pipeline pumping as one of the equipment items his company is most interested in buying.

The electric motor is also becoming increasingly attractive for gas line booster stations. El Paso Natural Gas Co., Trans-Canada Pipe Line Co., and Texas Eastern Transmission Corp. all plan to build such stations.

There's little doubt now that pipeline companies that buck the current trend to high-capacity meters, especially for crude lines, will be left with higher-than-necessary operating costs.

Any doubts that might have existed a year ago about the future of high-capacity meters in the oil business have all but vanished. Interstate Oil Pipe Line Co. helped dispel the doubt when it announced the results of its tests with a 10,000-bph. positive displacement meter developed by A. O. Smith Corp. Interstate found the meter to be accurate to within 0.1%. (PW—Nov.29'57,p44). Since then, orders for this meter and others like it have soared.

Comments of oil companies going to the new meters run like this:

- "We think we'll be able to get away from hand-measuring tanks, and maybe some day from installing tanks."
- "Savings in tankage and the other equipment associated with tank gauging will be handsome. And we can use the tank-gauging manpower profitably elsewhere in the pipeline operation."

The accuracy of positive displacement meters has been largely responsible for growing acceptance of automatic custody transfer by state regulatory bodies.

However, the positive displacement meter may get some competition from meters using an electronic flow-sensing element, such as the

MICROWAVE radio now has wide acceptance as "one of the most important advances in pipeline communication."

REMOTE CONTROL of pipeline pump stations—for more efficient operations—is also spreading fast.

Today's Pump Station Cost Lineup

Type of pump	Invest. $ per hp	Maint. $ per hp-yr	Energy mills per hp-hr
Electric (squirrel cage, induction motor)	$50-100	$0.5-2	4.9-9.5
Gas fired turbine	$160-280	$2.5-6	1.2-3.4
Supercharged diesel	$145-245	$4.5-12	4.5-8.8
Supercharged gas (high compression)	$140-240	$3-8	1-2.7
Supercharged dual fuel	$150-250	$4-10	1.4-3.1

PLAN '59 CONTINUED ▸

NEW TANKERS must have size tailored to their trade if owners are to get proper return on investment.

What Size Is Modern For Tankers Today?

Here's how costs now compare for foreign-built foreign-flag tankers in Kuwait-to-East Coast service, round-trip

	45,000 tons	65,000 tons	100,000 tons
Average Speed (knots)	17.5	16	15.5
Initial Cost	$9,675,000	$13,000,000	$19,000,000
Price per dw ton	$215	$200	$190
Route	Cape both ways	Cape both ways	Cape both ways
Time— Round trip	61.5 days	68 days	70 days
Cargo (bbl.)	297,900	441,300	689,500
Operating Cost (per day)	$5,198.71	$6,665.83	$9,037.92
Delivery Cost (per bbl.)	$1.07	$1.02	91¢

20,000-bph. meter developed by Pottermeter Co., of Union, N.J. This type of meter fits right into a pipeline.

Prevention of pipeline corrosion will be an easier job in the months ahead, thanks to some of the more recent developments in pipe coatings, according to most of the pipeliners surveyed by PETROLEUM WEEK:

"Some of the epoxy coatings now coming out look mighty good to us," one pipeline engineer says. "Besides good protection, the epoxy coatings also are applied quickly and easily. That's a mighty happy combination in a coating."

Another pipeliner observes "Pipeline coatings are getting better all the time. Besides the epoxies, plastic tape coatings also do a good job."

Creole Petroleum Corp., which is the oil industry's greatest user of large-diameter aluminum pipe, recently gave such pipe a vote of confidence as an effective corrosion-resistor in underwater operations by laying more aluminum pipe in its lake Maracaibo system.

TANKERS: BETTER, NOT JUST BIG

"If you want to talk about modernization in tankers," says the marine manager of an oil major, "you have to start with the size of the vessels themselves. We feel that for all-around flexibility in service in this hemisphere, you can't beat a ship in the 45,000-to-50,000-ton class." He adds, "For really long distance service you build almost the largest tanker you can."

This official points out that there are now 25 tankers in the first class and 10 in the latter, monster class, now under construction or on order in U.S. shipyards.

Tidewater Oil Co. is a good example of a company building these tanker sizes. Since 1954, the company has built five 46,500-tonners and four 50,000-tonners. Now it is building three more 46,500-tonners and two 73,000-tonners.

Just last month, Union Oil Co. of California took delivery of the largest tanker ever built in the U.S., the 60,000-ton Sansinena. The company will use the vessel—and two forthcoming sister ships—in service between Kuwait and Union Oil's Los Angeles refinery.

Tanker power plants are also coming under closer scrutiny by marine managers looking for more efficient operation, but unwilling to wait until the atomic tanker becomes an economical proposition.

The largest ship ever to be built at Sun Shipbuilding & Dry Dock Co.'s Chester (Pa.) yard will be a 47,750-tonner with a single-screw turbine power plant. The ship, on which work is only now beginning will be designed to travel at 17 knots, and will have a normal shaft-horsepower of 18,500.

A marine transportation expert makes this prediction, "Look for more new and better tanker power plants before long. And I mean before atomic-powered engines. The gas turbine power plant and even some new diesel engines are looking better."

One of the hottest-developing aspects of modernized tanker operation, however, is the increasingly successful fight being waged against tank corrosion. Coatings, cathodic protection, inhibitors, and deoxygenation are all playing an important part in this fight.

The Military Sea Transportation Service reports that its anticorrosion research has found a vinylidene resin coating "a complete bar to tanker corrosion." And a recent Sinclair Refining Co. laboratory report tells of reduction of 64% in the loss of metal from tank walls due to use of one of the inhibitors it developed.

Recent research studies on cathodic protection for crude-carrying tanks and deoxygenation for tankers in clean service have also been encouraging.

One vice-president in charge of marine operations comments, "We're getting to a point where better protection against corrosion in vessels in

clean service is a must. Tanker shipments of specialties—lube oils, xylenes, alkylate, even petroleum—are becoming more and more important. Those are mighty delicate cargoes. They need very effective protection."

New tanker-loading equipment, much quicker, neater, and safer than the older loading equipment, is pointing up the value of economical operation, too. The faster loading means less expensive "downtime" for a tanker in port.

Says the head of an independent tanker company. "The loading systems now available—the metal arm system especially—can reduce tanker turnaround time appreciably. And believe me, that saves a lot of money these days, with labor and operating costs what they are."

New navigating equipment is also making its contribution to improved tanker operation.

Among the instruments now being installed on tankers under construction is a dead-reckoning analyzer for operating in poor visibility conditions, such as in fog. The analyzer keeps track of turns and speeds, and maintains a ship's position. Also available is a radar reflection plotter, which provides easier and quicker observation of the speed and changes in direction of other ships.

IN TRUCKING: ALUMINUM GAINS

Truck transportation in the oil business, still growing, has its own modernization goal: to move more cargo per load more cheaply.

In recent years, the more sensational gains in crude and product movements made by pipelines have distracted attention from the small but steady increases made by tank trucks. The truckers, since 1946, have increased their portion of the petroleum transportation pie from about 17% to over 23%. And the future looks bright. If crude movement by truck seems to be leveling off, tank truck shipments of products show no signs of any slow-up in growth.

Approval of larger and lighter tanks is spreading fast among managers of petroleum-carrying truck fleets.

Aluminum is the big word here. Although it's not unanimous that investment in such lighter tanks is economical in the long run, Capitol Tank Lines, Inc., a California tank trucker, has just replaced its entire fleet with aluminum equipment.

Capitol figures that the aluminum gives it increased payload per trailer: The company's new tank truck and trailer units can carry 9,650 gal. of aviation gasoline as compared with 8,200 gal. carried in its older equipment.

Another factor weighed heavily in Capitol's decision to "go aluminum": "Our new tanks eliminate the formation of rust and other foreign material, reducing the need for costly and time-consuming strainer cleaning at unloading points."

A major company going to aluminum tank trucks feels that it can get its extra cost for aluminum back in three years—"but we have to use them at least 5,000 hours a year, or 90% of a 20-hour day."

Lighter-weight materials for other truck components are also helping to increase the cargo-to-weight ratio. Axles, wheels, rims, brake drums, and suspension systems are some of the truck parts now being made of aluminum or other light metals.

New operating techniques designed to cut costs are also coming under increasing study. The "Key-Stop" system—in which a truck driver makes late-evening or early-morning deliveries to closed service stations—is expected to keep on spreading.

This system requires a well-trained driver. But its payoff is three-fold: The around-the-clock delivery is carried out in such a way that the receiver is spared the expense of having personnel on duty; night-hour

INTEGRATED TOW is now considered to be most efficient way to move many oil shipments on inland waterways.

LARGER, LIGHTER aluminum tank trucks and trailers require plenty of use to offset their higher cost.

BIGGER TANK CARS, with up to 20,000 gal. capacity, now enable users to trim costs by shipping "twice as much product at one time."

PLAN '59 CONTINUED ▶

STORAGE BELOW earth's surface is now proving an economical solution to evaporation. Drill crews get such projects started, but . . .

EXCAVATION, plenty of it, is necessary before caverns can be made ready to receive products.

delivery is faster and safer because of less traffic; and late-hour deliveries don't interfere with the service station's business.

But there are tank truck experts who caution that such efforts are only scratching the surface. Cost-cutting, they say, could go a lot further in their business with more intelligent planning.

Lester A. Wilsey, Sr., president of the National Tank Truck Carriers, Inc., gives this opinion: "The basic solution [being offered] to our problems is larger loads and speedier deliveries. . . Only secondary thought is given to our unloading, which is one of the most costly of our services. On the average, 30% of a tank vehicle's operating time is spent in unloading.

"Consideration must be given now to our future capabilities. . . By solving these problems it would be possible to reduce the future cost of transportation by at least 16%."

BARGES, RAILS MODERNIZE TOO

A move toward more efficient operations in moving crude and products on inland waterways is also developing.

Esso Standard Oil Co. recently offered a good example of how to bring inland waterway operations up to date: Esso began with a broad reorganization, extended its modernizing—or "streamlining", as Esso called it—to a new set of accounting procedures, and then had a basis for operational changes now being put into effect.

Esso is increasing its use of higher-speed, smaller-crew waterway carriers, and is swinging heavily toward integrated tows for river traffic. And Esso, like other transporters using inland waterways, is looking with more favor on push-tows.

Other barge operators are concentrating on the specialties. Cities Service recently launched a special barge designed to haul liquefied petroleum gas when LPG demand is up, and ammonia when LPG demand slackens.

The newest railroad tank cars offer "kingsize" and special interior coatings in an attempt to boost the roads' dwindling crude and product cargoes.

Railroads haven't been a primary means of transportation for petroleum for many years. Back in 1938, about 16% of the crude and products transported in the U.S. went by rail. This year, however, the roads will get a little less than 4%.

In an effort to reverse—or at least slow up—this trend, railroad tank car manufacturers are offering oil shippers cars with capacities up to 20,000 gal., cars that offer "90% more capacity than standard cars for only 27% greater cost."

And because delicate petrochemicals seem to offer a budding market for rail transportation, new tank cars are now being made available with special anticorrosion coatings.

IN STORAGE: LOSSES ARE REDUCED

Those responsible for keeping crude and product storage operations up to date are taking aim at two old-time cost-increasing enemies: evaporation and corrosion.

Floating-roof tanks are getting the call more in the design of storage facilities. And the plastic-type coverings for use inside tanks are also becoming more important in cutting evaporation losses. K. C. Bottenberg, of Phillips Petroleum Co., believes that such coverings can now provide "floating-roof effectiveness" in preventing evaporation. Next, according to Bottenberg: coverings made of urethane foam.

Some majors are also singing the praises of a device they say has proved effective in cutting corrosion in crude storage tanks—a "tank mixer." This is an electrically driven vane installed near the top of a tank to circulate the liquid below periodically.

'59 MARKETING

Modern Stations Will Become A Critical Must

Marketers are going all out for bigness and brightness—supported by both streamlined merchandising and solid financing.

Stations and station equipment are the prime target for marketing modernization in 1959. The goal of the planners: to get optimum profit from each outlet, and to keep one step ahead of competition.

The words of Harry L. Moir, assistant vice-president and general manager of retail marketing for Pure Oil Co., do much to explain the focusing of modernization planning at the service station level: "Future levels of sales and profits—from dealer to supplier—will be largely determined by advances in thinking and planning for our share of a new, great market. . . . The arena for this effort will still be the marketplace where industries will compete for the consumer dollar. Our arena is still the service station, but with more at stake than ever before. . . . Any industrial boom of the size we envisage also brings accelerated obsolescence in currently accepted methods of doing business. How agile we are in changing our methods may be the difference between success and failure."

One of the biggest challenges to marketing planning lies in the changing concept of the service station—toward bigger and brighter facilities.

Increasing competition is dictating moves to build stations with room for more goods and services. As a result, station sites must be more spacious than ever. One major demands that sites have a minimum frontage of 125 ft. to 150 ft., with corresponding sidestreet frontage. American Petrofina is going after sites of comparable frontage for its new patio stations, "designed to keep pace with the changing habits of the American motorist." The Fina stations feature a covered patio and a lounge with vending machines for beverages, sandwiches—even paperback books.

Partly spurred on by private branders' rapid strides in station lighting, most companies are putting heavy emphasis on keeping up with the most modern lighting developments. Continental and Standard of Ohio are among those planning "impact lighting" that plays up brand signs and sales areas. Among the innovations: Single-tube facade lighting to give more illumination for less money (the entire front and side of the building are lighted); renewed experiments with white cement driveways to bounce more light; animated plastic signs; fluorescents shining through translucent plastic shields and letters; translucent colored Plexiglas panels, which show up at night; and power-groove lighting, a fluorescent that may come into wide use in 1959, according to Conoco.

PRESET PUMP, using device of Veeder-Root, Inc., modernizes the station island by allowing dealer to preset amount asked by motorist.

STATIONS GET BIG BUDGET

For some companies, modernization and expansion are riding on the same wave of spending—with large appropriations slated for new stations. Carter and Champlin, for instance, are in the midst of such expansions. Pure is adding 30 new truck-stops to its chain.

Tidewater is building about 85 stations in each of its two divisions in 1958, and plans the same rate of building for 1959. The company rebuilds 18 stations in each division every year. Douglas Oil Co. of California announced last month that it had $2-million in commitments from insurance companies for purchase and lease-back of 30 new multiple-pump stations.

Speedway Petroleum, Michigan independent, has launched a $2-million modernization program to build 100 stations and remodel 125 others, giving Speedway more than 900 outlets. The program, projected through June, 1961, emphasizes new pumps and station lighting.

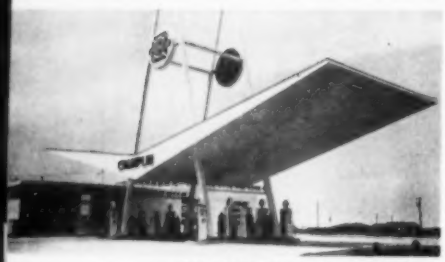
"It's simply a matter of remaining competitive," says James E. Ford, assistant vice-president. "You must give the dealer the facilities for adequate 'plus' profits."

EYE APPEAL of service station signs is shown at recent sign clinic held by Plasti-Line, Inc.

Some modernization goes into "reverse gear" and weeds out un-

PLAN '59 CONTINUED ▶

SINCLAIR test station, just built.



CHAMPLIN gets "modernized" effect.

SHELL is standardizing this design.

VENDING MACHINES are becoming a more common sight at service stations as supplying companies shift their sales policies to meet customer demand for varied merchandise.

profitable service stations, or disposes of overpriced property.

"Getting rid of 'crows' is modernization in a broad sense," says a top marketing official, "since it provides more output per unit, even though the number of outlets is not increased."

One major recently sold a 15,000-gal.-a-month station because the land value had risen $250,000. The "lazy capital" was put back into the kitty.

Shortage of capital means more rebuilding will be budgeted as "current expenses." And many firms will take a new look at prefabs.

"You can build a station around a doorknob, if you know how," says an official of one company, faced with a shortage of capital.

There's growing interest in all-steel porcelain-enamel prefabs. Though they usually cost more, they can bring long-term savings because of lower maintenance costs (table, page 73).

American Oil Co. is experimenting with a new portable and preassembled station, developed by Petro Merchandising Co., Linden, N.J. The station is moved, fully equipped, to a site where it goes up in one day.

A Southwest major, pressed by customer demand to join the canopy trend, is installing aluminum canopies that save $900 to $1,100, in addition to lower maintenance costs.

Another major is experimenting more with new materials than with new designs, primarily because previous design revisions to reduce costs have been nullified by inflation.

"The margin of profit is just too small to get into a race to produce the most bizarre type of station," says a company official. "We're all crying about station-building costs and trying to expand product lines to get a better payout. Pushing radical designs just isn't the thing to do."

Preset pumps may be a big equipment item. The majors are showing close interest in this type of pump, which allows the station attendant to set the pump for the exact amount requested by the customer.

Socony is testing the Veeder-Root, Inc., preset pumps at a training station in Hartford, Conn., and reportedly likes them very much.

Sohio also has a long-term study on the possibility of incorporating a credit card imprinter into its pumps.

California Standard, Conoco, and several other majors are favorably impressed with new rotary air compressors.

MERCHANDISING EFFORT BROADENS

A healthy crop of vending machines is already springing up at stations. More are predicted as customers demand a wider variety of goods and services. This trend puts a premium on well-trained dealers.

Emerging from the revolution in general retail marketing is a customer who expects to be catered to with one-stop service, expert knowhow, and bargains. Chartering of future customer demands is getting top-level attention from most majors. In the year ahead, stations will be testing a raft of new merchandising ideas.

Magnolia Petroleum considers its new sales-development centers in eight Southwestern cities a key factor in its station modernization program. The sales centers will serve as outlets for trying new ideas and for training dealers in new marketing techniques. D-X Sunray has opened a similar center in Tulsa and plans more in other divisions.

A Tidewater station in Los Angeles, modernized this summer, is experimenting with vending machines and a "merchandise mart" offering imported gift items. The vending machines sell sandwiches, coffee, soft drinks, candy, cigarettes, and similar items. Another major company is including a vending-machine area in all of its new stations—whether or not the machines are installed at construction time. An Esso district reports good results from dealer experiments with the sale of beach items and other non-oil merchandise.

Some companies are once more stepping up dealer training in how to use such merchandising to boost gasoline, lube, and TBA sales—rather

than let the station become a "hodgepodge wholesale house." One company has launched its most concerted training program yet, to "keep our service up, in every way, with our new superstation chain."

Supplier investments in new station equipment may well be the crux of better all-around driveway sales.

Some dealers don't have the funds for such equipment as a tire changer, wheel balancer, impact wrench, display racks, and battery chargers and testers. Many companies are supplying this equipment, with dealers leasing it or paying the company in installments. Customer demand for one-stop service is putting new emphasis on motor tuneup work and brake and transmission repair. Equipment needed for this kind of service may cost from $150 to $2,500. The oscilloscope is getting a bigger push from suppliers as an aid to engine analysis. Sinclair recently ran a trial promotion based on oscilloscopes, and Shell is urging its dealers to invest in the equipment, ranging from $100 to $725.

Many majors are planning heavy investment in new lifts at stations to keep up with automotive trends. Finding the lift that will handle all cars is a tough problem, however, because obsolescence can follow closely on the heels of modernization.

"The frame-contact type of lift can handle almost every car now on the road," says a big-company sales manager, "but because of the way frames will be built, and because of varying methods of wheel suspension, it's difficult to predict whether the frame-contact or drive-on lifts will be more widely used in the future."

Suppliers will also be spending more money to win credit customers and to keep accounting equipment up to date.

The stage is already set for a bigger-than-ever boom in credit buying, with marketers streamlining their credit card systems, adding imprinters at the pump, and putting to use new electronic accounting equipment.

The growth of independent credit systems, such as American Express and the Diners Club, has helped the spurt in credit buying.

Competition for credit customers will get tougher, with companies offering more dealer incentives and prizes. There'll be direct mail and doorbell ringing. American Oil, for instance, is using direct mail to go after groups of good credit risks, such as medical men.

Reorganization of marketing management will figure significantly in modernization plans and in efforts to beat competition. Sweeping shifts at Socony and Humble, for example, are aimed at pinpointing responsibility and freeing top management for more time to plan.

OIL HEAT STREAMLINES, TOO

Purchase of improved delivery equipment—such as tight-fill connections, bigger pumps, and bigger hoses—is at the top of modernization budgets for heating oil marketers, as the key to bigger profits.

One jobber, who is spending at least $50,000 to speed deliveries, calls these improvements the "hottest thing in the industry today."

Jobber Charles Eyster, of York, Pa., who developed his own tight-fill connection, has speeded truck deliveries to 120 gal. per minute with improved equipment. He markets the new tight-fill connection through a subsidiary, Time Saving Fills, Inc.

Scully Signal Co., of Melrose, Mass., and Plastic Appliance Co., of Philadelphia, also manufacture tight fills. Other manufacturers are expected to offer other versions soon.

What does it cost to modernize delivery equipment? One major estimates $500-$600 per truck for tight fills, larger hose, and larger pumps. Another figures a $350-$500 bill to change from 2-in. pipe to 3-in. pipe.

A jobber planning fairly complete truck changes budgets $1,800 to $2,000 for changes from multi- to single-compartment and from 2-in. to 3-in. pipe, a second hose-reel and meter, higher-capacity pumps, and larger hose.

How All-Steel Porcelain Enamel Stations Can Pay Out Through Lower Maintenance

(Figures give comparison with masonry service stations.)

15-Year Depreciation

Annual maintenance savings of:	*Added initial cost for porcelain steel — showing break-even point and annual rate of return on extra investment:* $1,000	$2,000	$3,000
$200	7.65 yrs. 13.07%	12.10 yrs. 8.27%	15.00 yrs. 6.67%
$400	4.41 yrs. 22.67%	7.65 yrs. 13.07%	10.14 yrs. 9.87%
$600	3.10 yrs. 32.27%	5.60 yrs. 17.87%	7.65 yrs. 13.07%
$800	2.39 yrs. 41.87%	4.41 yrs. 22.67%	6.15 yrs. 16.27%

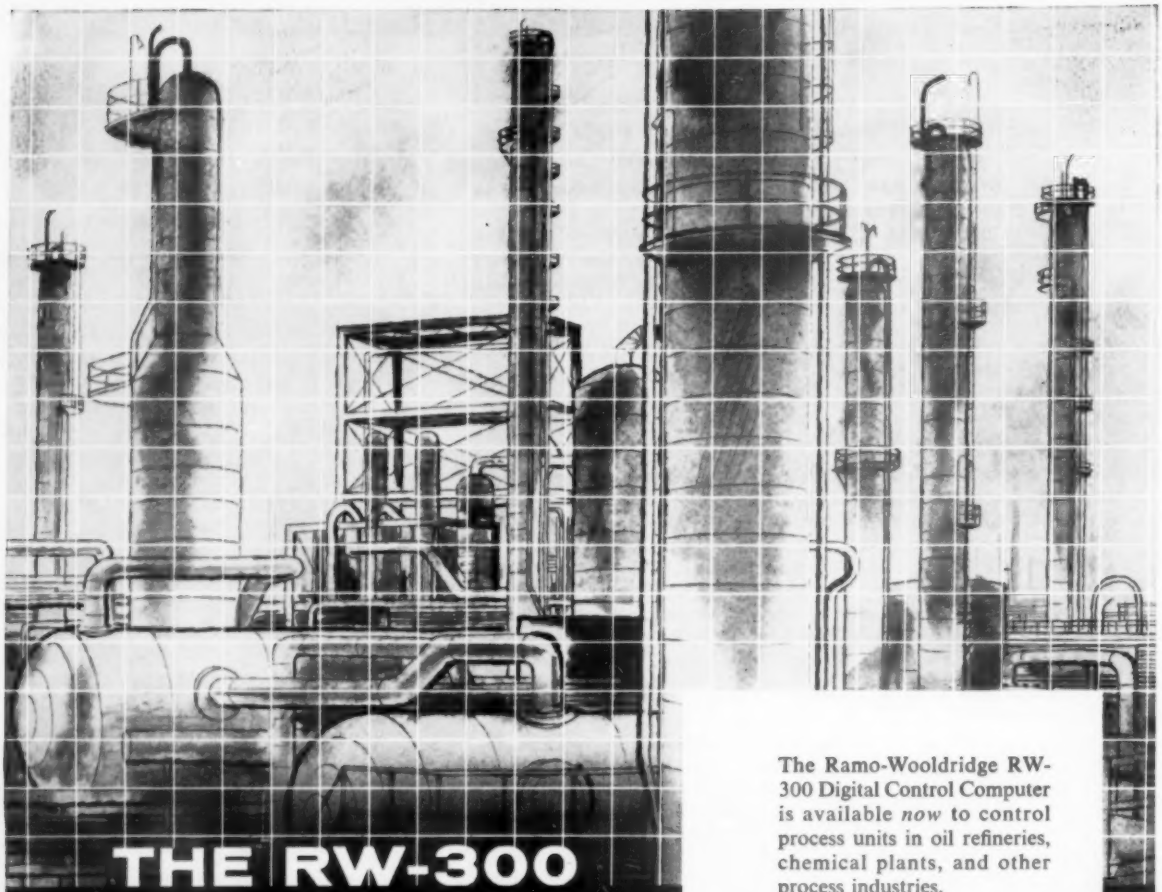
20-Year Depreciation

$200	8.20 yrs. 12.20%	13.51 yrs. 7.40%	17.24 yrs. 5.80%
$400	4.59 yrs. 21.80%	8.20 yrs. 12.20%	11.11 yrs. 9.00%
$600	3.18 yrs. 31.40%	5.88 yrs. 17.00%	8.20 yrs. 12.20%
$800	2.44 yrs. 41.00%	4.59 yrs. 21.80%	6.49 yrs. 15.40%

Data: Chicago Vitreous Corp. and National Petroleum News.

COST-CUTTING in oil heat service is accomplished by Electro-Watt, Inc., Seattle distributor who bought Volkswagen fleet and saved $748 per car and $360 per panel truck. (Details in November issue of National Petroleum News.)

PLAN '59 CONTINUED ▶



THE RW-300

is the first digital computer for automatic process control and data logging

The Ramo-Wooldridge RW-300 Digital Control Computer is available *now* to control process units in oil refineries, chemical plants, and other process industries.

The new RW-300 offers outstanding opportunities for higher profits from existing and future plants—through reduced operating costs, increased throughput and yields, and improved product quality. These benefits will pay back an investment in an RW-300 digital control system within six months to two years.

For technical information on automatic process control and advanced data logging with the RW-300, write: Director of Marketing, The Thompson-Ramo-Wooldridge Products Company, P.O. Box 45067, Airport Station, Los Angeles 45, California, or call OSborne 5-4601.

API members are invited to discuss computer control with us at the Conrad Hilton, Nov. 9-12.

THE THOMPSON-RAMO-WOOLDRIDGE PRODUCTS COMPANY

A PETROLEUM WEEK **SPECIAL REPORT**

PLAN '59 MANAGEMENT

The Big Question Is Deciding How To Spend Money

Investment decisions are getting more complex—but oil men are using sharper pencils. The cash they need should be there.

Planning by oil executives responsible for large capital expenditures is ruled by one fact: In today's economy, they can rarely afford to scrap older facilities and build new ones.

Clarence H. Thayer, vice-president in charge of manufacturing for Sun Oil Co., puts the situation this way, "Twenty-five years ago, it was common for an oil company to write off cracking plants in seven years. Then corporate taxes zoomed upward, accompanied by inflation. The Internal Revenue Bureau put the heat on corporations to amortize their plants at a slower rate. Today an oil company is more likely to be required to accept a 12-year or longer writeoff."

Taking into consideration today's tax levels, and other factors, he says, "a plant that formerly could be replaced every seven years without new capital must now give about 30 years of service."

Thayer adds that, unless conditions change, he sees "no escape from the necessity of constantly converting, altering, and automating plants."

Typical of the companies facing this necessity is the major that simulated its largest Eastern refinery on a computer. The first step was to find out what it was doing at the time. The second step was to analyze what the plant could do under optimum conditions. The third step was to design an idealized, optimum refinery having the same crude sources and market requirements as the actual plant. (On paper the ideal plant increased net profit 100%.) Although replacing the existing plant is out of the question financially, the company is aiming every revision in its step-by-step modernization toward the idealized refinery.

FORMULAS GUIDE SPENDING

How can oil management be sure it is spending modernization dollars wisely? It can't. But for big expenditures, formulas such as the discounted cash flow method are greatly narrowing the margin of error.

As polished by Joel Dean, professor of business economics at Columbia University's Graduate School of Business, this method aims at measuring the rate of return on an investment in a way that takes into account all important factors—some of which are bypassed by simpler formulas. In Dean's system, the rate of return means the discounting rate that makes the expected flow of net earnings from new equipment equal to the cost of the new equipment. This rate of return can be compared with rates from alternative investments. When analyzed with a company's costs of capital, the rate of return can be used as a guide in fixing capital budgets.

Finding the measure of a project's worth involves setting up a timetable that shows the effect the project will have on the cash flows of a company during each year of the project's duration. After the net effect of the project on the flow of cash into the company has been worked out for each year ahead, this stream of receipts is continuously discounted to discover the rate of return of the investment.

Continental Oil Co. is one of the companies that uses, and recommends, a discounted cash flow system—if it is used properly. "After three years' trial," says G. H. Hagle, Conoco's controller, "we think the method has helped all levels of management to appreciate the value of early completion of projects and the importance of early income. We also believe it has assisted executive management in the allocation of funds to various functions. However, it has by no means been a miracle."

Comments Shell Oil Co.'s controller, A. A. Buzzi: "Assuming that the basic data represent the best possible estimates, the discounted cash flow method will express in one percentage figure all the known quantifiable information, taking into account the value of money in time. Because it requires detailed forecasting, it serves to minimize risk by directing atten-

Debentures Popular For Raising Capital

(Issues greater than $15-million)

Issuing Company	Date	Amount in Millions	Terms
Superior Oil	7/18/56	60.0	3¼% debentures due 1981.
Sinclair Oil	11/15/56	167.2	4⅜% convertible subordinate debentures due 1986 (offer to stockholders).
Ohio Standard	1/8/57	25.0	4¼% sinking fund debentures due 1982.
Pacific Petroleums, Ltd.	1/23/57	15.0	5% convertible subordinate debentures due 1977.
Phillips Petroleum	2/8/57	171.7	4¼% convertible subordinate debentures due 1987 (offer to stockholders).
Atlantic Refining	6/20/57	100.0	4½% convertible subordinate debentures due 1987.
Shamrock Oil & Gas	10/3/57	17.5	5¼% convertible subordinate debentures due 1982.
British Petroleum	12/11/57	114.8	6% convertible debentures due 1980.
Richfield Oil (L.A.)	3/25/58	50.0	4⅜% convertible subordinate debentures due 1983.
Pacific Petroleums, Ltd.	4/10/58	30.0	5½% sinking fund debentures due 1973 with common stock purchase warrants attached. (U.S. transaction.)
Texaco	4/30/58	150.0	3¾% debentures due 1983.
California Standard	9/5/58	150.0	4⅜% sinking fund debentures due 1983.
Indiana Standard	9/18/58	200.0	4½% debentures due 1983.

PLAN '59 CONTINUED ▶

Dresser Industries and its

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Turbodrill Divisions invite you to bring a fr

DRESSER INDUSTRIES *and its companies are pleased to be your hosts again at the API SNACKBAR — where you meet your friends during this important API annual meeting. Dresser Industries and these 14 Dresser companies offer their best wishes for a successful meeting:*

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NOVEMBER 11, 1958

iend and enjoy their...

How to Plan Modernization

There are four basic steps in modernizing manufacturing plants, such as refineries, says the engineering and building firm, Walter Kidde Constructors:

(1) Determine production quotas. Decide what products should be dropped, retained, modified, or added. Estimate how much of each product should be made.

(2) Analyze products and their components. Decide which should be manufactured, and which purchased.

(3) Study the manufacturing facilities. Decide which equipment and processes should be modified or scrapped—and what new equipment purchased.

(4) Prepare the best layout of plant facilities.

Where Corrosion Costs the Most

RUST DEPRECIATION of oil equipment is greatest in areas near water, as shown in this simplified version of a Rust Index published by Rust-Oleum Corp.

Where Oil Companies Get Their Cash

From earnings	81.6%
Borrowings and sale of equity capital	15.6%
Sale of assets and other transactions	2.8%
	100.0%

How Oil Companies Use Their Cash

Capital expenditures	72.8%
Dividends to stockholders	18.2%
Retirement of long-term debt and purchase of equity securities	6.0%
Added to working capital	3.0%
	100.0%

Source: Petroleum Dept., Chase Manhattan Bank, based on financial analysis of 1957 operations of 33 sizable oil companies.

tion of management to all measurable factors affecting profitability."

For smaller investments, the "MAPI formula" is getting wide attention in industry. It is a kind of do-it-yourself kit to help independents, department heads, engineers, and accountants make investment analyses. The MAPI (from Machinery & Allied Products Institute) formula was developed by George Terborgh, economist and research director of the institute. The method (reviewed in detail in the Sept. 27 issue of the McGraw-Hill publication Business Week) aims for a figure called the "next-year rate of return."

This means the rate of return from an investment in new equipment if it is made now, rather than a year later. This gives a guide to the time when the return from a capital investment is greater than the cost of funds to be used, or greater than the return that the company usually seeks from its investments, or greater than the returns available from other investments.

The first of five factors the analyst must figure in using the MAPI formula is the operating advantage to be gained from the new equipment. He must answer such questions as: How will labor costs be affected? What about maintenance, tooling, and supplies? Will property taxes and insurance rise or fall? How will production volume be altered?

The next factor is the avoidance of capital consumption for the coming year. If the new project is delayed for a year, the old equipment may need money spent on it. This is the equivalent of a new investment, and at least part of the cost of overhaul should be regarded as a capital cost charged to the year. Also, there will probably be a decline in the disposal value of the old equipment after another year's use.

The third factor is the added income tax resulting from the higher income provided by new equipment. The extra tax has to be subtracted from gains produced by the first two factors.

Fourth, there is the cost of consuming the capital to be spent on the new equipment. To simplify this very complex calculation, the MAPI formula has a set of standardized charts, on which the analyst can work out an approximate, first-year capital consumption cost. The charts are based on: the rate at which the new project's earnings will decline; the service life of the new equipment, and its final value for sale, trade-in, or scrap; the corporate tax rate; the company's depreciation system; the interest rate the firm pays on borrowed capital; and other factors.

The fifth factor is the net investment in the project. From the total cost of buying and installing the new equipment, the analyst subtracts the money from salvage of the old equipment, and the money that it would have taken to keep the old equipment working.

FINANCING STILL TOUGH

Although most oil companies will be able to finance necessary modernization programs next year, getting enough money won't be easy. As in the past, depreciation allowances will account for most of the costs of replacing obsolete plants and equipment.

Depreciation is becoming more and more important as a source of internal funds. A recent study by the McGraw-Hill Dept. of Economics shows that depreciation in the years 1953-1957 accounted for 64% of total internal funds of U.S. corporations—with retained profits accounting for only 36%.

This year, depreciation allowances in all industry will run over $20-billion and—because of lower profits—may provide four times as much money as retained earnings.

A company operating at a loss, and paying no income tax or dividends, gains no additional cash from higher depreciation charges. Depreciation allowances merely enable a company to hold onto cash provided by sales or other income-producing activities.

PLAN '59 CONTINUED ▶

it's our pleasure!

Niels Kjeldsen

T. A. O'Donnell

John A. Baines

A. C. P. Jones

The headline-making development of Canada's oil riches since the Leduc discovery eleven years ago has been a story of cooperation between Americans and Canadians. The Oil and Gas Department of Canada's First Bank in Calgary has been "headquarters" for many U. S. oil men operating in Canada. With more than 250 branches spanning the oil provinces, the B of M has served the petroleum interests of U. S. oil men everywhere north of the border.

That's why *it's our pleasure* for the Bank of Montreal representatives to be seeing you at this year's A. P. I. Convention. They are staying at the Palmer House and will welcome the opportunity of talking Canadian oil with you.

Bank of Montreal representatives at the A.P.I.:

JOHN A. BAINES, *Manager*, Oil & Gas Department, Calgary, Alta.
NIELS KJELDSEN, *Special Representative*, Chicago
T. A. O'DONNELL, *Special Representative*, Chicago
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"MY BANK" TO 2 MILLION CANADIANS B of M

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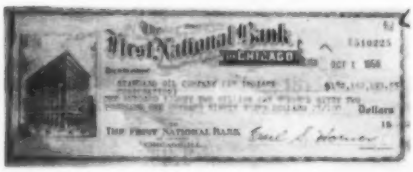
RAISING CAPITAL by sale of debentures is popular with some big oil firms. Here Indiana Standard Chairman Frank Prior (left) accepts check last month for more than $182-million from W. W. Wilson of Morgan Stanley & Co., leading underwriter. Watching are H. J. Livingston, president of First National Bank of Chicago, and David Graham, Standard vice-president. Check (below) was first payment toward $196-million realized.



NEW OFFICES of Warren Petroleum in Tulsa typify trend toward modernization of buildings where planning, financing, and accounting improvements are made.

Oil men, and businessmen generally, are hoping that some of the objectionable features of present depreciation rules will be removed, so that management will be in a better position to modernize. Industry would like corrective legislation in three main problem areas:

- The faster depreciation formulas allowed by the 1954 tax law cannot be applied to used equipment, which is important to small business.
- The periods of useful life over which Treasury Dept. regulations say buildings and equipment must be depreciated are in many cases outmoded in a time of rapid technological change.
- The current depreciation rules rely on the original cost of plant and equipment as the basis for depreciation. Recovering the amount of the original investment rarely provides adequate funds for replacement.

With oil prices still soft, and profits struggling for higher ground, many oil managements will be looking beyond earnings for their modernization capital. Some of the bigger companies are finding that sale of debentures can solve many a financing problem. As shown by the table on page 75, there have been a dozen large debenture offerings in the oil industry during the past two years. Among other large-sum transactions was the sale by Colorado Oil & Gas Corp. this summer of $15-million of 5⅜% secured notes, due in 1978, to four insurance companies. The natural gas industry has been active in going outside for new capital.

Big stock issues are currently not so popular as last year, when Jersey Standard, Socony Mobil, Halliburton Oil Well Cementing, and Kerr-McGee Oil Industries made large equity offerings to existing stockholders or to the public. These companies raised amounts from $15-million to $288-million (Jersey Standard's figure). There have been no similar stock offerings in 1958.

Despite some forecasts that credit is going to get tighter, the oil banks say oil producers with good ratings should have no trouble getting loans in the next year. The vice-president of a southwestern bank speaks for other large oil banks when he says, "Money will be available for loans to producers and drilling contractors, provided their credit is good, and their income is ample."

Speaking for his own bank, the vice-president adds, "In the matter of strictly exploration work—seismic operations, contract drilling, and exploring for oil by producers—we will give credit, using the company's accounts receivable, contracts, or other collateral for security. But we will always take a long look at any 'speculative' projects."

The outlook for loans to independent producers, marketers, and other nonintegrated oil companies is being brightened by the new loan program of the federal Small Business Administration. SBA is licensing small-business investment companies (including those formed by various oil associations) to make loans to small firms. SBA has a revolving fund of $650-million for regular loans ($500-million for business loans, $125-million for disaster loans, and $25-million for subcontracting of government purchases).

For the small-business investment companies, SBA has a fund of $250-million. But the bulk of the loan capital will come from private sources.

The risk in replacing old tankers with new is reduced by the fact that operators can get government mortgage insurance on tanker building. The maximum they can obtain is 87½% of the total construction cost of the ship. As of now, about 30 tankers are being built, with a third of them using this mortgage insurance.

Leasing of service stations, storage tanks, electronic computers, and other facilities is helping some oil companies avoid tying up cash. Leasing has the effect of deferring payments over several years, and also of deferring taxes by classifying rent as an operating expense. But it can have some disadvantages that require advance screening.

PLAN '59

MANAGEMENT

Electronics Will Open the Door To 'Optimization'

Next year will be a big one for computers in helping shape management decisions and in taking over new bookkeeping chores.

The use of computers to give executives a "scientific" base for decisions will get its biggest boost yet in 1959. Some of the big companies will start putting into action long-range plans for "optimizing" their integrated operations. By feeding "raw" information from various departments into a central computer, capable of analyzing an immensely complex set of variables, the companies will be shooting for decision-making recommendations as nearly foolproof as possible.

"In the coming year," says a major company electronics coordinator, 'we will move toward our goal of complete integration of supply, processing, and demand. Communications are still a bottleneck, but there's no reason we can't eventually work out some kind of teletype-cable-radio-computer combination. There is big money involved."

Most of the majors and some of the larger independents now have controllers, electronics committeemen, systems and methods men, operations research specialists—as well as operating men themselves—planning the best ways to feed the right data to the electronic computing systems. For example, one electronics coordinator is looking for a way to find out, at frequent intervals, the locations of all oil tankers on the seas. This would include his company's own tankers, as well as those of competitors. The information is needed for global supply-demand computations.

Getting heavy stress is computer simulation of refinery operations, as a means of optimizing yields, crude-buying, product distribution, and sales. As only one illustration, Socony Mobil Oil Co. recently made the first transceiver hookup between the giant IBM 704 computer center in Socony's New York headquarters and the Paulsboro (N.J.) refinery, 97 mi. away. Information transmitted by electrical impulses over wire is received in New York on punched cards. This data—such as the type of crude in Paulsboro and the types of products desired—is given to the IBM 704 for computation. Within five minutes, the computer's recommendations on the optimum use of processing facilities is transmitted back to Paulsboro.

Next year will see the most rapid modernization yet in office accounting, with electronic data-processing the main tool. In most majors, computers will take on increasingly the routine task of handling payrolls, credit accounts, dividend checks, stock control, sales statistics, and many other paperwork chores, some of which can be used in decision-making.

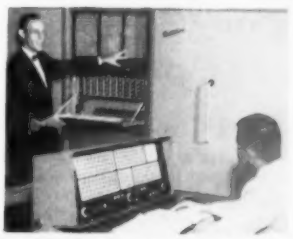
Indiana Standard is in high gear with medium-sized IBM 650 computers in eight regional sales offices, all of which provide information for the company's giant home-office machine in Chicago. Esso Standard is building at Towson, Md., a computer center that will use leased wires to send data between the center and ten marketing division offices.

The savings in accounting-electronics can be staggering. One major invested $1.2-million in computer equipment (by no means the industry's largest investment), and estimates that the savings (starting about now) will be close to $250,000 a year next year. The company expects to recover the total investment by 1964.

By installing the new computer, the company was able to release obsolete tabulating and key-punch equipment that had a rental totaling 60% of the rental of the new equipment.

As in other oil operations, oil-management's electronics thinking for 1959 tends more toward an upgrading of present facilities than toward large additions of new capacity. The oil industry now has close to 100 large- and medium-scale computers. (International Business Machines leads in installations by a wide margin, followed by the ElectroData Division of Burroughs Corp.).

DIVIDEND CHECKS, 203,000 of them each quarter, are now printed electronically by Socony Mobil.



ACCOUNTING is the main function of Datatron computer, shown by A. B. Johnston, head of data processing research for General Petroleum.

PLAN '59 CONTINUED ▶

'59 MANAGEMENT

How Oil Companies Can Polish Their Decision-Making

Consultants see modernizing of organization and administration as vital for oil in the narrow-profit period ahead.

"To meet the challenge of future conditions, it will be essential for top petroleum management to make fundamental revisions of its plan of organization and its administrative practices." That is the conviction of oil-industry specialists with McKinsey & Co., **one of the country's leading management consultant firms,** with headquarters in New York City.

Having served eleven domestic and international oil majors in the past nine years, the firm believes that "narrowing profit margins, and reduced generation of capital from within, will put an increasing demand on management to take advantage of every important cost-saving opportunity, and make every dollar of capital work harder."

Three of McKinsey's directors have reviewed for PETROLEUM WEEK what they see as the chief "modernization" opportunities that "management of successful oil companies can use to make their operations even more successful."

The consultants' main points are these: First, a heavy load of current administrative decision-making seriously cuts into top-management time that should be devoted to major decisions and long-range planning. Many day-to-day decisions are so important they must be made by top management. In many oil companies, however, a flood of less important matters floats to the top, far from levels at which many of these decisions could be made better, in the light of everyday job experience. Conscientious top management is forced to inquire for more facts in order to make decisions. This sets hierarchies of staff and line people to work, and often creates layering of management. And it can mean the accumulation of more information than is needed in some areas, and the omission of fundamentals in others.

Another obstacle in the way of proper long-range planning is failure to state the company's total objectives properly. A challenge management must meet is breaking objectives down into specifics that will enable departmental executives to develop their plans properly—so that the sum of the departmental plans will generate the greatest long-term return.

A third barrier is inadequate staff work. The efficient use of executive time can be increased greatly with small, high-caliber planning staffs. These would assist operating managers by putting together plans—and by serving as coordinators of information, as inquiring critics, and as proposers of alternatives. Moreover, present staff planners need better cost tools and more guidance by top line management.

The tendency to "committee management" reduces individual executive accountability for results and slows decision-making. Management cannot fairly hold a man responsible for the failure of a course of action taken after discussion and decision in committee. And successes pose just as difficult a problem. Was an executive really responsible, or was it the committee? When looking for promotion candidates, how can management be sure an individual is a good risk?

Committees also waste executive time because many decisions made by committees after lengthy deliberation could be made by one or two responsible executives. Executives tend to "feel out" the situation, and decisions usually are not reached until a majority approves—and majority opinion does not automatically result in the best decision. Furthermore, the use of committee methods at high levels is repeated throughout the company, further multiplying the problems.

Management must develop more meaningful performance standards —for the integrated business, for departments, and for individuals. It is particularly important to develop standards and performance meas-

Oil Management Specialists With McKinsey & Co.

Marvin Bower
Managing Director

Phillip S. Babb
Director

E. Everett Smith
Director

Danger Spots In Management

McKinsey & Co. says oil companies of all sizes could benefit by screening their operations for the following shortcomings:

1. Too much top-management time on current problems.
2. Insufficient time spent on long-range planning.
3. Excessive use of committees.
4. Outmoded performance standards.
5. Promotion of inadequately trained managers.
6. Lack of simple, timely data for decision-making.
7. Poor use of staff personnel.

ures that help executives plan resourcefully and measure operating results. For example, careful scrutiny should be given to many criteria and rules of thumb that are now used at various levels, such as rules for making important investment decisions. Some of these criteria may have achieved the status of unquestioned postulates—although they may be almost infallible in leading to poor decisions. An illustration is sole emphasis on a so-called profit in every department.

Development of new performance standards will not be easy, and will require substantial changes in executive attitudes, habits, and practices, together with dedicated and persistent effort on the part of top management.

Top managers have an increasing obligation to pick, as their successors, tested executive talent. Broadening and testing potential managers under fire early in their careers may be achieved by rotation of executives through assignments that carry real responsibility, by regular exposure to the thinking of able men outside the company, and by more and more emphasis on a competitive atmosphere in which managers are judged on results achieved in their assigned areas.

There is a need for simpler, more timely, and less costly information. Despite advances in data processing, a vast underbrush of paper still chokes oil management's informational forest, providing far too much irrelevant and untimely data. Obviously this data is costly in itself, and is often confusing rather than enlightening to executives who want simple, relevant, and timely information for planning and decision-making.

NEEDED: COMPANYWIDE LOGISTICS

Current operations can be made more efficient through adoption of a companywide approach to basic logistics problems. Primarily, this involves coordinated planning and administration of transportation, storage, and handling of product—and the management of inventories from crude at the well until product is delivered to the customer.

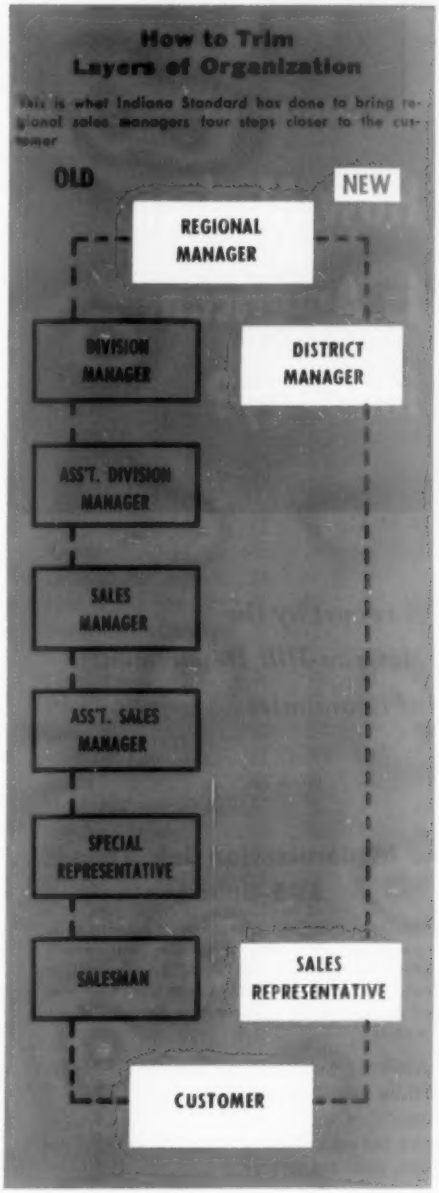
With narrowing profit margins, individual departments cannot work at this problem in isolation. It must be top management that decides to take actions that may cost $2-million in one department, save $4-million in another, and thus net $2-million for the whole company. Such a companywide approach requires capable planners assigned full time, and the application of some of the newer analytical tools of operations research, in addition to full top-management backing.

Other gains could come through elimination of unneeded management levels, plus better use of staff and service personnel. Some of the "extra" managerial layers may once have had real economic value, and some may have evolved when it was easier to add manpower to cope with growth than to reorganize to handle it with fewer people. But under today's more competitive conditions, the high cost of the salaries of these extra layers, the cumbersome administration, and the costly delays in decision-making cannot be tolerated.

Pointing up the tendency of staff and service groups to grow and perpetuate themselves is this example: In two large companies of comparable size and complexity, staff groups to top management, with the same responsibility, comprised 7 employees in one company, 43 in the second. The smaller group was doing the better job at a fraction of the annual cost, and its morale was better.

Every activity must meet this test: "Would long-term profits be adversely affected if the activity were dropped?"

The "tough-minded approach" needed for such a management modernization effort will make many people unhappy, including some of the company's ablest men. But, the McKinsey men conclude, "with patience, determination, and time, such a program will produce major additional profits and toughen the company for the rigorous days to come."



PLAN '59 CONTINUED ▶

'59 PLAN

ECONOMICS

How Modern Is American Industry?

A report by the McGraw-Hill Department of Economics

The U.S.A. is starting a new period of economic growth, as we leave behind the recession of 1958. This new period presents a challenge to the nation, to the business community and above all to the individual company—*to grow at a profit.*

By now it is clear that growth is the normal way of life for the U.S. economy. Since 1947, our national product has been growing at a rate of 3.7% a year. And no recession, even the latest and most publicized, has interrupted the trend for long. Now the economy is growing again.

But the conditions of growth are far different from those that prevailed in the years 1947 to 1957.

Today growth in the economy does not mean pressure on capacity, for most industrial firms. It does not mean easy profits.

This is growth under highly competitive conditions, with profits dependent on a firm's ability to hold down costs. Is our plant and equipment modern enough to do the job?

A NEW SURVEY

To find the answers to this question, the McGraw-Hill Dept. of Economics has just completed a special survey of business needs for modernization. **McGraw-Hill's survey shows that it would cost $95 billion to replace today's obsolete equipment.** And this is a priority job, if business is to get costs down for the years ahead.

This tremendous need for modernization presents a challenge to the U.S.A. as a nation. The Communist powers are making a strong and disciplined effort to demonstrate that they can out-produce us—that they can "plow us under" in a contest of industrial strength.

It is a challenge to American business. Our people expect a continuously rising standard of living. Our workers expect wage increases. And often their demands mean price inflation—unless we can achieve sharp gains in output. The public demands higher national income without inflation. This is the challenge to business as a whole.

It is a challenge to the individual firm. Growth in the economy no longer means an automatic rise in sales and profits for any particular company. There are no shortages; industrial capacity is ample. So to participate in growth, the individual firm must achieve better quality or lower costs than its competitors. Otherwise, there will be no profit in growth and no success story for the company.

Is business prepared today for these challenges? The answer, from our study, is clearly "No." The production and distribution facilities of the U.S.A. are not efficient enough to ensure our continuing superiority over the Communist world, to match every wage increase with higher productivity, to do business in a competitive economy at satisfactory profit to the individual firm.

This statement sounds shocking at a time when much individual capacity is idle and the recession just behind us is being blamed on a surplus of capital goods. But the facts speak for themselves.

DECADE OF EXPANSION*

Since 1947, private business in the U.S.A. has invested $291-billion in new plant and equipment. Our manufacturing capacity has increased about 80%; electric power capacity, 145%; capacity for basic raw materials, by 55%. The distribution and service industries have increased floor space by roughly 50% in the decade. In 1957 alone, business spent $37-billion on new plants and equipment—more than the combined expenditure in all of Western Europe plus Canada.

But all of this expenditure has not made our facilities as modern as supposed, or as modern as we need.

Of the $291-billion invested by business since 1947, roughly $157-

The Modernization Job Ahead: $95-Billion

The McGraw-Hill Dept. of Economics asked a wide sample of manufacturing companies, and experts in other industries: "What would be the cost to replace all obsolete facilities with the best new plant and equipment?" Here is a summary of the estimates:

Manufacturing and mining	$34.3-billion
Petroleum industry	**5.3**
Transportation and communications	18.4
Electric and gas utilities	12.0
Finance, trade and services	25.0
Total: All Business	$95.0-billion

*Figures on "Decade of Expansion" are for the years 1947-1957 inclusive, except where specific reference is made to preliminary data for 1958.

billion has been for expansion capacity. Only $134-billion has been spent to replace old facilities with better, more modern equipment. And in recent years, this investment has not purchased as much new equipment as the dollar figures suggest, because prices of capital goods have climbed.

Our postwar capital investment has repaired the worst of the obsolescence accumulated during the depression and war years. But huge amounts of old equipment are still in use, as shown by the table (right). This is based on a survey of the age of manufacturing capacity in several hundred companies, representing all of the major manufacturing industries. Almost 50% of our present capacity was installed before or during World War II. More than 65% was installed before Korea. Expert studies of the major non-manufacturing industries show that the age of equipment, in those industries, is even greater.

Of all business plant and equipment, less than one-third is modern in the sense of "new" since 1950; two-thirds is pre-Korea.

This over-all figure is confirmed by a check on specific industries:

- Nearly two-thirds of our metal-working equipment was installed over ten years ago, according to preliminary results of AMERICAN MACHINIST's 1958 census.
- Over 65% of the freight cars on our railroads are more than ten years old.
- Less than half the capacity to process chemicals, rubber or petroleum is new since 1950—a period that has seen rapid development in such equipment as automatic controls for these process industries.

These examples take on a dollars-and-cents meaning when we recognize that the latest machine tools are about 40% more productive than 1948 models, and that a combination of new freight cars and modern freight yard equipment can reduce operating costs up to 50%.

New instruments, that automatically direct the flow of a chemical (or other raw material) process, can often reduce processing costs enough to pay back the cost of the instruments in one year. These savings cannot be made in older plants. By using obsolete facilities, our industries accept a waste in labor and materials that totals many billions of dollars per year.

WHY PRODUCTIVITY MUST RISE

The U.S.A. can ill afford this waste. In the economic struggle between the free world and Communist world, our margin of superiority depends on the efficiency of our productive facilities.

For the growth of our own economy, we shall need a sharp rise in productive efficiency. During the next ten years, American business must provide the goods and services required for a population that will increase by 32 million. And the increased population will expect higher living standards. Furthermore, the population in ten years will include a higher proportion of dependent persons—children and retired people—and a smaller proportion of working age men. Thus, with a relatively smaller labor force, industry must provide more goods for more consumers.

At the same time, industry must strive to hold the line against rising costs. In an economy with a tight labor supply, we cannot count on restraint in wage demands, however desirable such a development might be. In the past ten years, hourly wage rates have increased over 5% per year, nearly twice as fast as output per manhour. And this disparity may well continue—causing still more inflation—unless we make more rapid gains in productivity.

We can make these rapid gains—if industry goes all out to modernize its equipment. Output per manhour (in manufacturing) has increased only 2.5% per year since 1951. But this compares with gains of 4% a year in 1947-1950, and over 5% in the 1920s. Today the machines and techniques are available for us to equal, or exceed, these records—to raise output per manhour at least 5% per year.

The McGraw-Hill Survey Of Modernization Needs

Conducted by the McGraw-Hill Dept. of Economics in August, 1958

Industry:	Age of Manufacturing Capacity Percent Installed: Prior to 12/45	12/45 to 12/50	12/50 to 12/57	Cost to Replace Obsolete Facilities: Millions of $
Iron and Steel	47%	16%	37%	2,855
Nonferrous Metals	47	13	40	1,022
Machinery	41	21	38	3,224
Electrical Machinery	34	18	48	1,917
Autos, Trucks, and Parts	42	11	47	2,204
Transportation Equipment (aircraft, ships, railroad equipment)	59	9	32	854
Other Metalworking	54	17	29	2,351
Chemicals	30	23	47	3,070
Paper and Pulp	49	17	34	2,655
Rubber	46	9	45	600
Stone, Clay, and Glass	46	20	34	1,840
Petroleum Refining	**45**	**26**	**29**	**1,499**
Food and Beverages	58	19	23	3,443
Textiles	59	18	23	1,001
Misc. Manufacturing	51	21	28	6,236
All Manufacturing*	**48**	**19**	**33**	**34,771**

**Includes petroleum refining companies listed under "petroleum industry" in previous table.*

PLAN '59 CONTINUED ▶

Modernization Pays

Profits on modernization—like all business profits—have come down since 1955. However, modernization, in contrast to new capacity, still offers a relatively quick return on investment. Here are companies' answers to the question: "In cases where you are actually replacing old facilities with new plant and equipment in 1958—how soon do you expect these replacement expenditures to pay off?"

	Percent of Companies Answering			
Industry:	1-2 years	3-5 years	6-8 years	9 years & over
Iron and Steel	11%	56%	11%	22%
Nonferrous Metals	29	71	0	0
Machinery	12	56	12	20
Electrical Machinery	29	57	7	7
Autos, Trucks and Parts	40	60	0	0
Transportation Equipment (aircraft, ships, railroad equipment)	7	53	20	20
Other Metalworking	38	33	10	19
Chemicals	10	53	21	16
Paper and Pulp	22	22	22	34
Rubber	33	33	34	0
Stone, Clay, and Glass	0	57	36	7
Petroleum Refining	**16**	**50**	**17**	**17**
Food and Beverages	16	44	12	28
Textiles	37	47	5	11
Misc. Manufacturing	9	52	13	26
All Manufacturing*	**18**	**50**	**14**	**18**

Note: Answers to a similar question, in a 1955 McGraw-Hill survey, were as follows: 1-2 years: 17%, 3-5 years: 64%, 6-8 years: 11%, 9 years or more: 8%

THE JOB AHEAD

The dimensions of this opportunity are shown by the table on the previous page. In its survey on the need for modernization, the McGraw-Hill Department of Economics asked a wide sample of manufacturing companies how much it would cost to replace *all* their out-dated facilities with the best new equipment available. The Department also interviewed experts in each of the non-manufacturing industries.

Modernization of over-age facilities—replacing only what is really obsolete by today's production standards—would require a total capital investment of $95-billion, or nearly $20-billion per year for the next five years.

Furthermore, new production techniques will soon make *today's* plants obsolete, in many cases. Thus, to keep pace with technical advance *from 1958 on*, will require continuing expenditures of $8-billion to $10-billion per year for modernization.*

The total expenditure to wipe out the backlog of obsolete facilities, and keep up with continuing technical advance between now and 1963, would be at least $135-billion.

The U.S.A. has never spent such a sum on the modernization of industrial facilities. Capital expenditures of boom dimension have, in the past, been associated only with the urgent expansion of capacity. Some forecasters are now saying that because industrial capacity is adequate, the next few years will be a period of low capital investment. The figures above make clear that this would be a national calamity. The opportunity is there—and the challenge—to invest record amounts of capital in the modernization of plant and equipment.

This is a challenge to the U.S.A. as a nation. For 100 years, this nation has been looked to as the model of economic development by the rest of the world. For the first time, we face a serious challenge by another nation and another economic system that claims to be better. In a carefully documented 111-page study released in May, the U.S. State Dept. declared that "the most serious threat" to the U.S.A. today is the drive for economic supremacy by the Soviet Union.† Although a much smaller nation industrially than the U.S.A., the U.S.S.R. is today increasing its national output at a rate of 7% per year and its output per manhour by 4% per year.

The U.S.A. does not have to match these specific figures, which represent the results of forced labor in a country just starting to develop industrially. In the contest to win uncommitted nations, the statistics are not likely to be quoted exactly, in any case. But our over-all growth in national output and living standards must be so impressive as to leave no question of superiority. Our factories must be showplaces of modernization to the foreign visitor that will leave him unable to say "I saw much better" in Britain, or West Germany, or Russia.

This is the challenge to the nation—a political challenge to be sure. But it coincides with the challenge to the business community and the individual firm. And the way to meet it is the same: by thorough and rapid modernization of our plant and equipment—not by the slow and steady pace of recent years, but at an accelerated rate that reflects the greater pressure for output at lower cost.

OBSTACLES TO BE OVERCOME

We must face up to the fact that real obstacles—both technical and financial—stand in the way of faster modernization. Some companies do not have the technical "knowhow" required for the latest production techniques. Many more lack the financial resources. How can we overcome such obstacles, and speed up the replacement of old facilities?

In the course of its study, the Dept. of Economics obtained comments on these questions from many executives. One of the problems, as noted above, has been the urgent pressure to expand capacity during most of

*This estimate is based on technical developments reported by McGraw-Hill editors and current price trends for capital goods. It is consistent with the plans for modernization expenditures in 1958-61 reported by companies in a McGraw-Hill survey conducted in August, 1958.

†"The Sino-Soviet Economic Offensive in the Less Developed Countries"—U.S. Dept. of State, May, 1958.

the postwar period. In giving their attention to this problem, companies have sometimes overlooked the chance to modernize older plants.

In some cases, equipment has been kept in place because it was satisfactory, and the users were not aware of still newer designs. Some equipment users believe that equipment makers are not sufficiently aggressive in designing and demonstrating new models.

The biggest obstacle—and one that presents a persistent problem—is the shortage of funds in many companies that need and want to modernize. For all corporations, the cash flow from retained earnings and depreciation has increased by more than $5-billion from 1953 to 1958. But a number of key industries have failed to keep pace with the general trend. These include some of the areas where the need for modernization is most urgent: the railroads, large sections of the textile industry, some mining industries and many small to medium-size companies in manufacturing generally. The problem of these industries and companies has grown more acute in 1958—since their profits have declined.

Any plan to step up the pace of modernization generally must deal with the special situation in these problem areas. Depressed industries and companies need outside help, if they are to modernize. Such help would include a stronger flow of technical information and advice (and occasionally, venture capital) from the more prosperous, inventive industries—as well as advice from equipment suppliers and distributors, industrial publishers and consultants.

Certainly we should lose no time in reforming those provisions of the federal tax laws that now impede investment in modern equipment by hard-pressed firms—especially the outmoded and unfair restrictions on rates of depreciation for tax purposes. At present, the tax regulations require that depreciation be computed over relatively long periods of "useful life" for most types of equipment. And this is a primary reason for the lag in modernization. Machinery generally becomes obsolete long before the expiration of its "useful life" as specified in tax regulations. But it is difficult for companies—especially small companies—to set aside cash for rapid replacement, unless the full amount to be set aside is exempt from income tax. Canada and most European nations allow more rapid depreciation for tax purposes than does the United States.

A combination of self-help with technical help, and a fair break from the tax laws, would do much to reverse the spreading tide of obsolescence.

PLAN '59

It is this combination that McGraw-Hill advocates as "PLAN '59," to help business modernize *now* for growth and profits. This is what it will take to make a start in 1959 on the $95-billion job of modernization, disclosed by the study we have just completed:

(1) A better flow of technical information on where and how to modernize business plants and equipment.

(2) Careful review by the individual company of its own opportunities to modernize at a profit—then action to replace obsolete facilities.

(3) Reform of the tax laws, to allow more realistic deductions for depreciation, and permit more companies to finance adequate modernization programs from this source of funds.

Much of this program is already underway. The 34 McGraw-Hill publications, and many suppliers and distributors of industrial equipment, have stepped up their information programs to start the modernization drive. Preliminary plans of manufacturing companies show a strong emphasis on capital spending for this purpose. In August, Congress passed a bill providing limited tax relief for small business.

The real task of modernization still lies ahead. It is the greatest challenge, and the greatest opportunity, confronting American business as we move forward into 1959.

A report by the McGraw-Hill Department of Economics

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Reprints of this report are being prepared, and will be available later this month. Single copies will be sent to Petroleum Week subscribers on request without charge. Additional copies will be billed at the following rates: 1-10 copies, $1 each; 11-100, 80¢ each; 101-1,000, 60¢ each; over 1,000, 40¢ each. Address orders to:

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Puerto Rican Products to Get Shortcut

Puerto Rico will probably have its first pipeline—an 8-in. products line cutting across the heart of the island—in operation by mid-1959.

Backers of the newly formed Pipelines of Puerto Rico, Inc., feel that the San Juan market, on the north coast, has grown enough to be linked by pipeline to its chief source of supply—Commonwealth Oil & Refining Co.'s 55,000 b/d refinery at Penuelas, on the south coast.

Late last month, Pipelines of Puerto Rico asked the Public Service Commission of Puerto Rico for authorization to build such a line. A hearing on the request is expected early this month. And, since island officials are already on record as favoring such a line, Pipelines of Puerto Rico expects an official go-ahead before the end of the month.

The line, which would eventually carry up to 27,000 b/d of motor fuels, kerosine, and LPG, will run from Penuelas to San Juan.

Right of way has not been completely pinned down, but Pipelines of Puerto Rico says that the line will probably pass through the towns of Barranquitas and Naranjito. The road distance between Penuelas and San Juan is about 95 mi.

Because of rugged terrain in the interior, the relatively short line may take up to six months to complete.

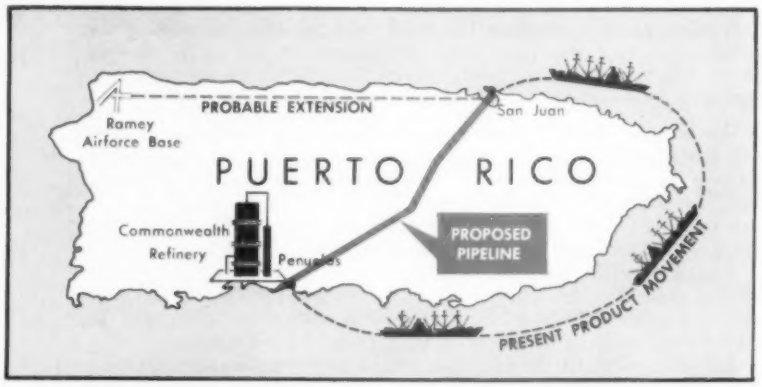
Pipeline Technologists, Inc., of Houston, recently completed engineering studies for the line.

The line is expected to begin operations by moving only about 15,000 b/d from the Commonwealth plant. One pump station, at Guayanilla, near Penuelas, will supply the muscle for the line. Additional pumping horsepower may be added at the Guayanilla station when the line's throughput is increased to its possible top capacity of 27,000 b/d.

The line will turn the principal supply route of the growing San Juan market outside in (map).

Commonwealth has been taking care of about 75% of San Juan's 20,000 b/d demand by sending small tanker shipments around the east coast of the island, a distance of about 150 mi.

The rest of the needed product is delivered in San Juan harbor from Caribbean refineries. These "imports" will probably continue even after the pipeline is built.



PRODUCTS PIPELINE across Puerto Rico will end around-the-coast shipments.

More than likely, the first Puerto Rican line will be extended, shortly after completion, to the Ramey Air Force Base, some 80 mi. west of San Juan.

This extension is not included in the present Pipelines of Puerto Rico application. But a company spokesman told PETROLEUM WEEK that discussions are already under way with the Air Force for such a line, and that construction of such an extension—which would necessitate increasing the line's capacity to 27,000 b/d—may be under way before the end of 1959.

The air base, located on the north coast near Aguadilla, is almost inaccessible for marine delivery of fuel. Such deliveries have been made, but only with serious difficulty, and the Air Force is said to be anxious to have a pipeline deliver the fuel instead.

Even before the extension to Ramey is undertaken, Pipelines of Puerto Rico expects to build spurs to the San Juan International Airport and a naval air station in the San Juan suburbs. However, neither of these projects are in the company's present proposal.

Texas Eastern Goes Automatic

Texas Eastern Transmission Corp. is giving the natural gas transmission business a new shove toward remote-controlled compressor stations.

The gas pipeline companies have been slower than crude and product pipeliners in swinging to automatic stations. But now, one by one, the gas firms are introducing remote control (PW—Oct.3'58,p80).

Texas Eastern is the latest gas pipeline company to be convinced that such stations will play a major role in the gas transmission future. The company is about ready with its first mainline remote controlled station, and already plans four more.

A. J. Shoup, Texas Eastern's vice-president and chief engineer, describes the company's enthusiasm on its automatic stations this way:

"The use of this new remotely-controlled station and its related equipment is expected to open up a whole new field of operational technique for the natural gas pipeline industry."

Major advantage of such stations, according to Shoup, is increased operating efficiency, because "a station operated by automatic equipment eliminates the possibility of human error."

Texas Eastern's first remote-controlled station is on its mainline, at Linden, N. J. The station will begin regular operations sometime this winter. It will be controlled from Texas Eastern's Lambertville(N. J.) compressor station.

Texas Eastern expects to have four more stations—these on its Penn-Jersey line, which runs from Pittsburgh to the Lambertville mainline connection—operating before the end of 1959.

The company now plans to use its remote-controlled stations only during winter peak-demand months.

Shoup explains, "As load continues to build up higher and higher, an operator at a controlling station [will] start the compressors at his remote station to help move the gas by adding its compression push into the line."

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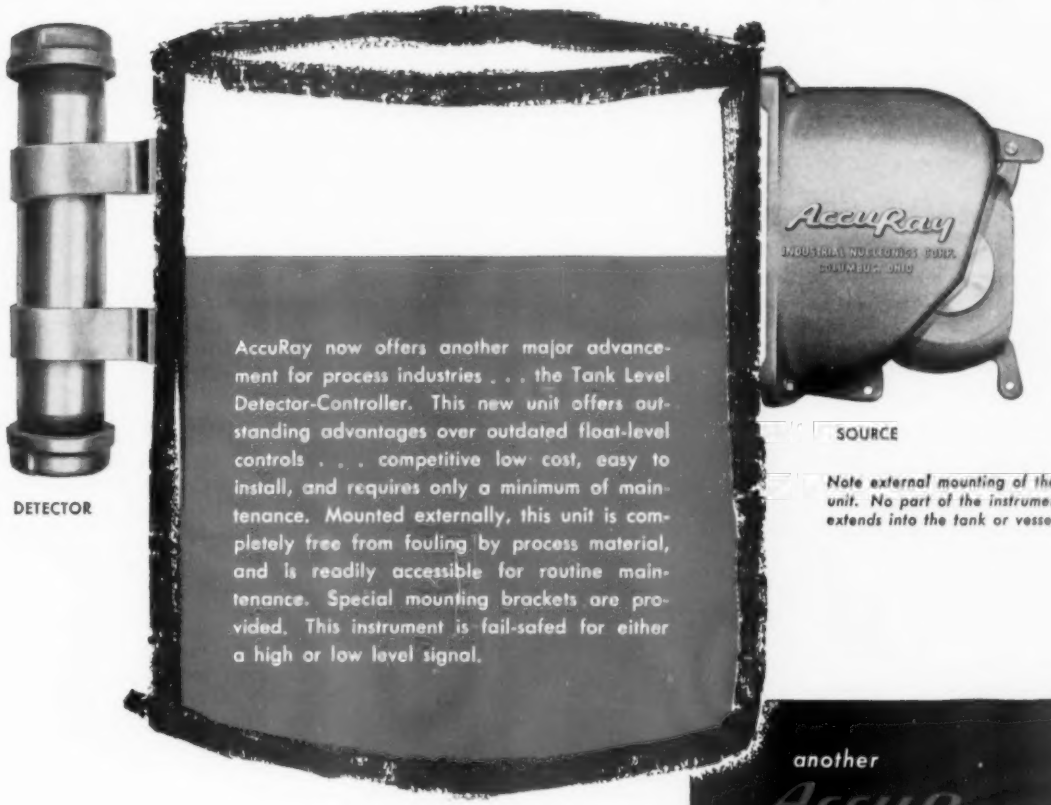

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What's New / IN TRANSPORTATION

"Biggest Barge" Will Supply Hess Refinery

"The world's largest barge," launched last week in Houston, will be used in petroleum service by Hess Trading & Transportation Co. to supply the new Hess refinery at Sewaren, N. J.

The barge, which has a 65,900-bbl. capacity, is 300 ft. long, has a 60-ft. beam, and will draw 22 ft. of water. It will be used largely in unloading supertankers in New York harbor and taking their crude to the Hess refinery, which is inaccessible to many fully-loaded supertankers.

The barge will also be used "to move crude and products between various East Coast terminals and the refinery," according to H. W. McCollum, vice president of Hess Terminals Corp.

•

The Interstate Commerce Commission plans some changes in the uniform system of accounts for pipeline companies.

ICC is out to revise the rule under which cost of minor property purchases is charged to operating expenses. The commission also wants to prescribe a primary property account for interest during pipeline construction.

The proposed changes are set out in detail in the Oct. 25 Federal Register. Companies have until Nov. 14 to file comments or request oral argument dates on the proposed changes.

•

Teton Pipeline Corp. plans to build a pipeline outlet for the Rolff Lake, Northwest Sheldon Dome, and Sheldon Dome fields, near Riverton, Wyo.

The system will be about 25 mi. long and will connect the fields with the mainlines of both Platte Pipe Line Co. and Service Pipe Line Co. near Pilot Butte, Wyo. The pipe will be 6 in. in diameter.

Crude from the three fields is now trucked to Pilot Butte.

•

A Federal Power Commission examiner has approved Southern Natural Gas Co.'s request to build facilities which would enable it to buy gas in the Dexter field, in south-central Mississippi.

Southern wants to buy 27-million cu. ft. of gas daily from two Dexter field producers, Kin-Ark Oil Co. and Skelly Oil Co. Southern would build about $220,000 worth of gathering lines in the field. The Dexter field is in Walthall and Marion Counties.

•

Direct Transport Co. of Kentucky has been certificated as a common carrier of petroleum products from the Princeton (Ind.) and Lebanon (Ohio) terminals of the Little Inch line to markets throughout Indiana, Kentucky, and West Virginia.

The Interstate Commerce Commission recently granted Direct Transport a certificate of public convenience and necessity.

•

The Federal Power Commission has authorized Texas Gas Transmission Corp.'s $20-million expansion plan.

Texas Gas intends to build facilities which will increase its system's sales capacity by 134-million cu. ft. of gas daily. The facilities will be spread through Louisiana, Arkansas, Mississippi, Kentucky, Indiana, Illinois and Tennessee.

•

For the 11th consecutive month, no new tanker orders were received in September by American shipyards, according to the latest report of the Shipbuilders Council of America.

And, although no tankers were delivered during September, two tankers —both 32,700-tonners—were launched during the month.

Compressor Engine Set for Storage Work

This 2,000-hp. compressor engine will soon be used to move natural gas from Pennsylvania storage toward East Coast consumers. The engine is being installed at the gas storage field now being prepared by New York State Natural Gas Corp. in Clinton and Potter Counties, north-central Pennsylvania.

New York Natural, besides installing a total of 27,000 compressor horsepower, is also reworking all wells in the old Leidy and Tamarack gas fields and laying connecting lines from the wells to the compressor station. Transcontinental Gas Pipe Line Corp., a partner in the project, will use the field next year to store up to 30-billion cu. ft. of gas. Transco is currently laying a 192-mi. connecting line from the field to its East Coast mainline in New Jersey.

Ultimate storage capacity of the field will be about 105-billion cu. ft. of gas—about 45-billion cu. ft. of cushion gas for necessary reservoir pressure, and the rest for use by Transco, New York Natural, and the third partner in the project, Texas Eastern Transmission Corp., to serve their Eastern markets.

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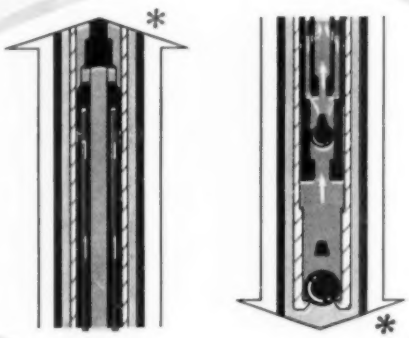

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DEPT/Letters

'Fine, Authoritative'

Dear Sir:

Your special report on drilling [PW—Oct.3'58,p34] is one of the finest, most authoritative it has been my pleasure to read. Congratulations!

I was especially pleased with your comments with regard to the industry's recognition of the advantages of diesel-electric rigs. As you are probably aware, General Electric has been manufacturing electric drive, here in Erie, for several years. Experience with our equipment in the field backs up your statement, "The diesel-electric rig seems to be gaining favor with contractors because of its proved ability to make hole quickly, and its easy portability."

JACK R. HARVEY
LOCOMOTIVE & CAR EQUIPMENT DEPT.
GENERAL ELECTRIC CO.
ERIE, PA.

We Love You Too

Dear Sir:

Your fine article, "Don't Underestimate Desk & Derrick" [PW—Oct.17 '58,p14], has, I suspect, earned you 9,000 ardent female readers.

Thanks so much for your fine handling of our story.

LOUISE RITCHEY
PRESIDENT
EL DORADO DESK & DERRICK CLUB
EL DORADO, ARK.

For Wider Spacing

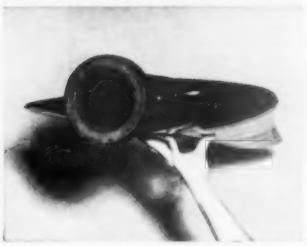
Dear Sir:

Your editorial, "Wide Spacing Needed Early" [PW—Aug.1'58,p16], strikes me as being timely and especially needed by operators, large and small, in all development east of the Mississippi River.

Take the Citronelle field, in southern Alabama, for instance. Also, had the operators been able to foresee the pitfalls of 40-acre spacing as early as the Tinsley field, in Yazoo County, Miss. (September, 1939), and had so much oil not been "pulled" on short spacing rules, Tinsley, instead of being on its last legs, would still be classed as one of the major producing fields in America.

80-acre, or even 160-acre, spacing in future fields in Mississippi and Alabama, especially in deeper producing areas, is almost a must until the fields are fully developed.

The sooner state laws are passed to regulate the evils of short spacing, the



Lightweight.

Easy installation and adjustment.

NEW HUDSON TUF-LITE FANS

After six years of development work and tests of trial field installations operating under wide ranges of conditions in cooling towers, finned tube coolers, and in highly corrosive chemical plant ventilating service, Hudson presents a new product—the TUF-LITE fan. The blades, cast in one seamless piece of fiber glass reinforced synthetic resin, are hollow, light and tough. TUF-LITE fans afford the following advantages over any other available type of fan:

SAFE: TUF-LITE blades being lightweight (about ¼ the weight of other blades with comparable capacity) and infrangible, eliminate the hazards to personnel and equipment existent through accidental throwing or disintegration of heavy metal, wood, or laminated blades while in service.

EFFICIENT: More air is moved at less horsepower because weight and finishing operations do not impose limitations on selections of best aerodynamic design; therefore nearly ideal airfoil cross sections, commercially attainable only in TUF-LITE blades, can be used. Blades will not sag or distort, and surfaces remain permanently smooth.

LOW MAINTENANCE: TUF-LITE blades are unaffected by corrosive, abrasive or impingement effects of hot saturated air, sand, rain, or hail, and have superior deterioration resistance to practically all corrosive vapors or liquids. Blade materials contain color pigment; no painting is necessary. Light weight reduces stress and maintenance on bearings, gears, drive shafts, and supports.

QUIET: The permanently smooth surfaces, very light weight, sustained perfect balance, and advanced aerodynamic design minimize noise.

EASE IN INSTALLATION: Light weight of blades and ingenious design of hub and blade coupling allows attachment of blades by one man using only small wrench. Coupling design assures uniformity of pitch of all blades, and as blades of same size are identical and interchangeable, perfect fan balance is preassured.

In replacement of present fans or in installations on new cooling equipment of any manufacture TAKE ADVANTAGE OF THE OUTSTANDING SUPERIORITY OF HUDSON TUF-LITE FANS.

Bulletin on TUF-LITE FANS
Available upon Request

TUF-LITE protected by U.S. copyrights, patents and patents pending

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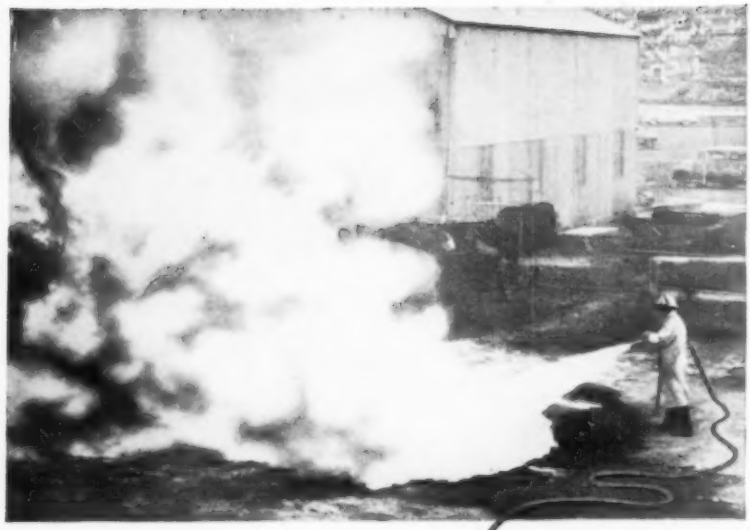
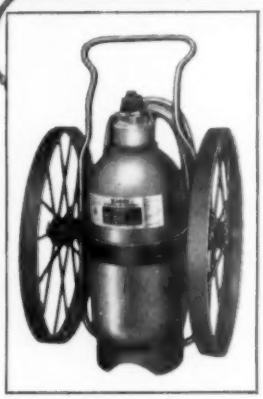


NEW!

One-Man Dry Chemical Kills More Fire Faster!



This new Kidde pressurized 200-pound extinguisher gets *more* fire-smothering dry chemical on a blaze *faster!* Its universal nozzle discharges a dense 40-foot stream that gives more efficient extinguishing action, greater heat protection for operator.

It has an *extra* 50 pounds of dry chemical to discharge on any stubborn blaze. Not 150 pounds, but a full 200 pounds of dry chemical – a 33⅓% bonus for safety! Yet its total weight is less – no heavy, cumbersome gas cylinder.

It's faster to operate too. No valves to unscrew. No wait for pressurization, for dry chemical to fluff. No pressure reducer to malfunction. Just remove safety pin, swing valve toggle, and flip "on-off" nozzle lever. There's no hose whip either.

Only Kidde has the Bridgeman seal head assembly. When pressurized at 450 psi with nitrogen or *dry* air, an inner force of three tons acts on the seal – the more pressure, the tighter seal. Virtually leak-proof, tamper-proof.

Check these other benefits. A low, balanced center of gravity, wider handle, compact design, and larger, lubricated wheels make it easy to move. It's weather and corrosion protected. And the shielded dust-and moisture-proof pressure gauge tells at a glance this extinguisher's readiness for action.

Write Kidde today and get the full story on this new U.L.-approved One Man Fire Engine.

Kidde (K Kidde)

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Walter Kidde & Company of Canada Ltd.
Montreal – Toronto – Vancouver

sooner all concerned will fulfill the ultimate results in production, with less worry in future development.

A. M. KEISKER

JACKSON, MISS.

Reader Keisker's point appears to be well-taken. The Alabama Oil & Gas Board has just relaxed its well-spacing requirements to allow 160-acre spacing (PW—Oct.31'58,p21).

'High Quality'

Dear Sir:

We should like to add our congratulations to the many you must already have received on Wanda Jablonski's remarkable feature, "The Sovereign Right to Welch" [PW—Sep.12'58,p 14].

This is one more instance of the high quality we have come to expect not only from Miss Jablonski, but from your excellent publication.

We look forward to having more of the same.

ROBERT J. SCHWEITZER

DRESSER INDUSTRIES, INC.

NEW YORK, N. Y.

Oil in Barber County

Dear Sir:

In your Drilling Highlights section [PW—Aug.1'58,p34], you reported that the Petroleum, Inc., No. 1 Jacobs, section 28-32S-14W, gives Barber County its first oil production. I think you meant to say this discovery gives the pool—the Elsea Gas Field—its first oil production, since the county itself had oil production as far back as 1934.

EDWARD E. PUGH, JR.

CHIEF GEOLOGIST

NATIONAL COOPERATIVE REFINERY ASSN.

WICHITA, KAN.

Reader Pugh is right. We should have said that this was the first oil production for that pool, not for all of Barber County.

PETROLEUM WEEK will publish from time to time comments from readers on timely, pertinent subjects. Expressions of opinions are welcomed; they should be kept as brief as possible.

Address all such correspondence to LeRoy Menzing, Editor, PETROLEUM WEEK, 330 W. 42nd St., New York 36, N. Y.

DU PONT *Petroleum Chemicals* NEWS

Number 92 in a Series of Bulletins for the Petroleum Industry

NOVEMBER 1958

Progress report on "rumble" and "thud" studies

Five years ago, researchers in the Du Pont Petroleum Laboratory isolated a new phenomenon in the performance of high-compression ratio engines. They called it "rumble."

THE CHASSIS DYNAMOMETER setup at the Du Pont Petroleum Laboratory is helpful to Du Pont engineers in pinpointing the causes and effects of rumble and thud in high-compression ratio engines.

"Rumble," a low-pitched noise produced in engines of about 9.5:1 or higher compression ratio, is usually noticeable on hills or during accelerations above 40 or 50 miles per hour and when the throttle is wide, or nearly wide, open. Laboratory tests show that it is associated with a high rate of pressure rise within the cylinders of such engines, plus the presence of combustion chamber deposits.

Now—"Thud"

Another low-pitched noise has been noted in tests at the Du Pont Laboratory. It has been given the name "thud."

"Thud" takes place in the same types of high-compression ratio engines as "rumble," with one significant difference – it can occur in the absence of combustion chamber deposits.

FOA-2 makes costly tank cleaning unnecessary

Recently another case history of dollars saved through fuel oil improvement came to Du Pont: No. 6 residual fuel was being burned at a factory in upstate New York. This plant uses about 3 million gallons of fuel per year. It is first delivered to a 300,000-gallon storage tank and then transferred to a 17,000-gallon horizontal work tank.

Sludge build-up meant costly clean-outs

Sludge was playing havoc with the work tank, largely because the inlet and outlet connections were located at its head end, and sludge built up rapidly at the far end. When it reached a depth of several feet, it threatened to interfere with suction pipe operation. So every few months it was necessary to open the tank, and send a work crew inside to remove the accumulation manually. A "messy," time-consuming and costly job.

How FOA-2 solved the problem

Last February about 10-15 gallons of Du Pont Fuel Oil Additive No. 2 was poured into this tank, in the hope that it would stabilize the fuel and reduce sludging, thus extending the time between clean-outs. After the fuel in the tank had been consumed in the normal manner, it was quickly discovered that virtually no sludge remained. The additive had solubilized and dispersed the sludge, and stabilized the fuel. Therefore the plant promptly adopted a program of treating its fuel oil with FOA-2 to eliminate the costly clean-out operation.

If you or your customers are experiencing fuel oil sludging problems, let your Du Pont representative work out a solution for you.

ADVERTISEMENT—Prepared for the Petroleum Chemicals Division of E. I. du Pont de Nemours & Company (Inc.)

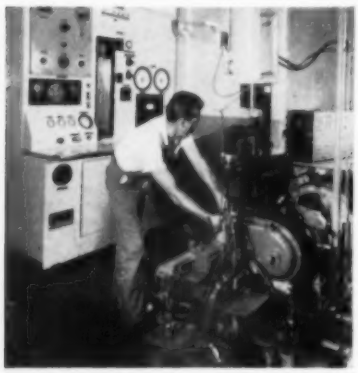
OVER

DU PONT *Petroleum Chemicals* NEWS

CONTINUED *"rumble and thud"*

Investigations of both rumble and thud are going on today, in engines in the Du Pont Petroleum Laboratory. Gasoline technology stands to benefit importantly from these tests, as it has in the past from Du Pont investigations of "knock" and "wild ping."

Through these and other studies of combustion phenomena, Du Pont automotive engineers have gained extensive working knowledge of the behavior of hydrocarbons. This helps Du Pont work with refiners in blending gasoline stocks for optimum performance and lowest manufacturing costs.



▲ **LABORATORY,** as well as on-the-road and dynamometer engine tests, are employed by Du Pont scientists in their studies to uncover every detail related to rumble and thud. ▼

Details available to you

Numerous papers have been presented by Du Pont technologists on the subjects of rumble, thud, knock and ping. Your Du Pont Petroleum Chemicals representative will gladly get copies for you.

YOU OUGHT TO KNOW . . .

E. HEARN SIMPSON, Sales Manager of Du Pont's Petroleum Chemicals Division, joined the company in 1930 in the Fabrics and Finishes Department. Two years later he was transferred to the Organic Chemicals Department and for a number of years he was a salesman of products as diverse as industrial alcohol, anti-freeze and gasoline antioxidants.

Five years were devoted to sales of the latter, in both the Mid-Continent and Gulf Coast regions.

Hearn Simpson's career at Du Pont was interrupted for three years while he served as a naval officer on aircraft carriers in the Pacific theater of operations.

On his return to Du Pont in 1946, Mr. Simpson was made sales manager of alcohol and camphor. He was elevated to his present position in 1950.

Mr. Simpson attended Colorado University and was graduated from the University of Denver with a Bachelor of Science degree.

Nylon cord tires a step toward highway safety

On today's turnpikes and thruways, four tire hazards are becoming increasingly serious. Tires with nylon cord are a long step toward eliminating them all.

Heat is the biggest threat. Sustained speeds of 60 or more miles per hour are not unusual on many of our superhighways. Nylon resists the effects of heat, reducing the chances of tire failure at these critical speeds.

The particular problem with heat is that it has a way of bringing out the worst in a tire, of finding and preying upon all the defects that may have come about through bruising, moisture and flex fatigue, the other three tire hazards.

Nylon corded tires have high resistance to heat.

Tough nylon safely withstands violent twists, bends and flexing without damage to the tire. And the chemical nature of nylon is such that moisture doesn't harm it.

As America's superhighway program moves forward, the demand for safe, reliable protection will result in the increased use of tires corded with nylon, another petrochemical product made possible by the cooperation of the petroleum and chemical industries.

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Du Pont Tetraethyl Lead and other Petroleum Additives

OVER

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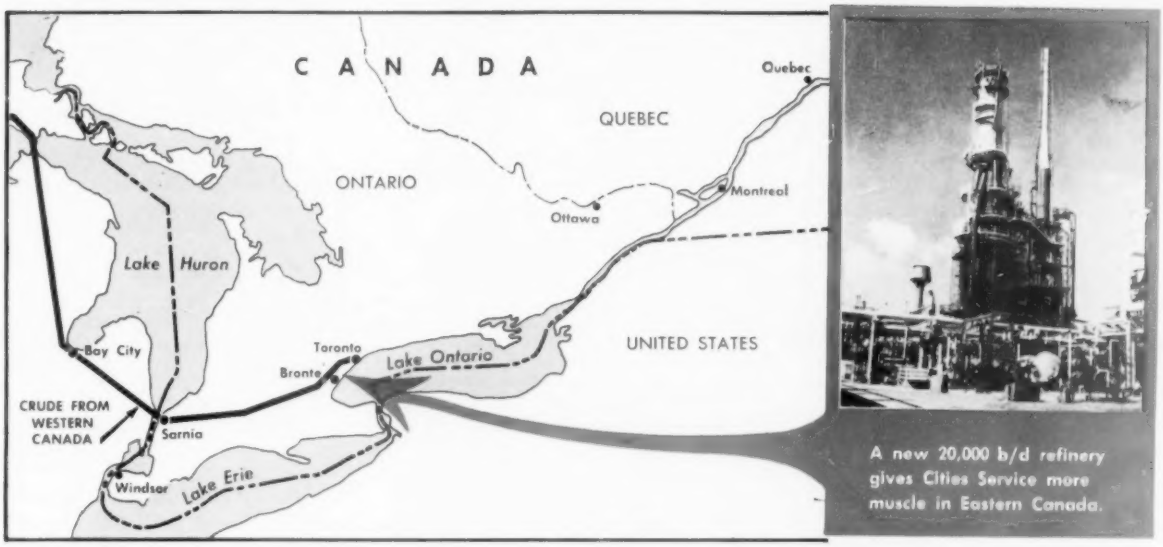


There's a strong new competitor in Eastern Canada as . . .

Cities Service Joins Ontario Refiners

Cities Service Oil Co., Ltd., expects its brand new 20,000 b/d Trafalgar (Ontario) refinery will help make the company a power to be reckoned with in the increasingly competitive Eastern Canadian market.

Cities Service has been marketing in Ontario and Quebec Provinces for 35 years. All this time, however, it has depended upon other suppliers for products.

In 1956, when competition in Eastern Canada took on a new, fiercer, look BP Canada, Ltd., and Regent Refining, Ltd., announced intentions to market there, while other majors started on ambitious expansion programs (PW—Aug.17'56,p26). Cities Service then decided it was time to construct a refinery of its own in Eastern Canada.

The plant, designed especially to serve the Ontario-Quebec market, has just been put on stream. It's located near Bronte, Ont., about 30 mi. west of Toronto.

Like many recent refineries, the Trafalgar plant emphasizes economy in design: Processing units, which run on an integrated basis, are positioned to form a rectangle around the central control house.

Cities Service calls the rectangle formed by the Trafalgar crude unit, cat cracker, cat reformer, and gas plant the "most economical plant layout" for its purposes.

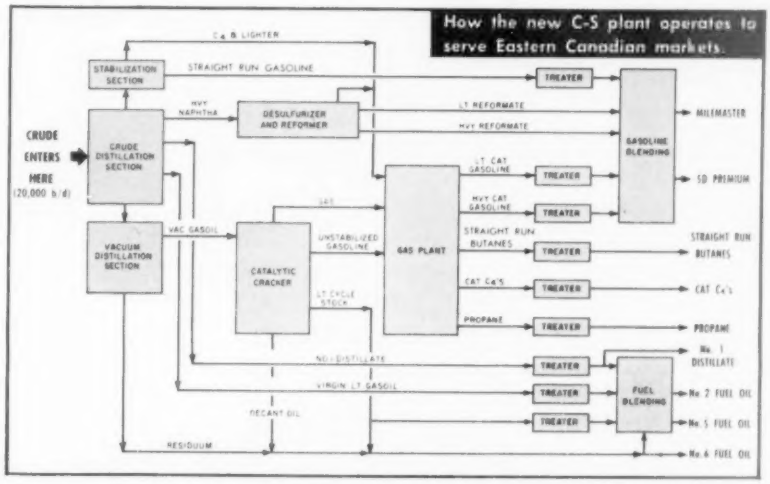
This layout also allows for doubling the refinery's capacity at low cost and with the least interference to operations.

After considerable study by Cities Service engineers working with C. F. Braun & Co. of Canada, Ltd., the contractor for design, engineering, and construction of the plant, Cities Service decided on a highly-integrated processing system for Trafalgar.

Again, economy called the turn. The company says it chose the integrated setup for "savings in both capital and operating costs."

Hot flow of products from unit to unit with a minimum of intermediate tankage "eliminated large expenditures for storage, feed pumps, transfer lines, instruments, and heat exchangers," according to the company.

Process selection for the Trafalgar plant minimizes gasoline production because a higher gasoline yield would have resulted in an inadequate production of distillates for Cities Serv-



THE NEW CANADIAN REFINERY now in operation for Cities Service Oil Co., Ltd., emphasizes process integration, and deemphasizes intermediate stream storage.

ice's Eastern Canadian market. Nevertheless, the plant will satisfy Cities Service's needs for its housebrand and premium gasolines while making sufficient fuel oils (Nos. 1, 2, 5, and 6) and LPG.

Efficient, economical operation also results from design features of individual units.

The crude unit, which runs on mixed Pembina, Saskatchewan, and Manitoba crudes, uses a 42-tray fractionating column operating at about 45 psig. to separate various fractions and a two-step condensing system for overhead vapors. The condensing system, Cities Service says, reduces corrosion and eliminates the need for costly "cladding" in the upper section of the fractionator.

The fluid cat cracker has its reactor above its regenerator. Cities Service says it gets 75% conversion with a reactor temperature of 925F. Design of this unit was licensed from Universal Oil Products Co.

The Trafalgar gas plant uses a separate depropanizer to handle only the overheads from crude and reformer stabilizers. This keeps the straight-run butane stream separated from the catalytic butane-butylene stream throughout the process.

Heavy naphtha from the crude unit, before it is fed to the cat reformer, is desulfurized with a cobalt-Molybdenum catalyst in a radial-flow reactor, which is lined with 12-chrome steel. Desulfurization takes place at 300 psig. and 775F.

Unlike most reformers, The Trafalgar reformer has fired heaters located upstream of each of its three reactors. Cities Service feels that this arrangement is more flexible in operation, and more economical, than use of one or two large heaters.

The reactors, which use Sinclair-Baker platinum-bearing catalyst, operate at 940F to 990F and about 450 psig.

The refinery also has facilities for treating nine product streams.

- Five streams—butane, catalytic butane-butylene, straight-run gasoline, light cat gasoline, and heavy cat gasoline—receive the same treatment, caustic wash.
- Propane is treated by diethanolamine and caustic. Then it's dehydrated with calcium chloride.
- No. 1 distillate is sweetened in a Petreco-licensed Bender-process treater.
- Virgin light gas oil is water-washed, then dried in a Petreco electrical precipitator.
- Light cycle oil from the cracker fractionator is washed with weak caustic, then dried in a Petreco electrical precipitator.

Cities Service also figures it will get more for its maintenance dollar, because it has contracted for such work. Catalytic Construction Co. of Canada, Ltd., will handle maintenance at Trafalgar.

The Trafalgar plant will be the first Cities Service refinery to use contract maintenance. Company management feels, however, that the time is ripe for this kind of maintenance operation.

Main advantage, the company says, is "a flexible work force as required. Contract maintenance . . . provides a plant with a maintenance force equal to the requirements of work load, whether it be at its normal or peak loads."

However, the company has retained the basic responsibility for "planning, coordination, and partial supervision" of the maintenance function.

About 50 men will be furnished by Catalytic Construction for routine maintenance. During major turn arounds, about 300 additional men will be brought into the plant.

Although the plant's elaborate provisions for waste control can hardly

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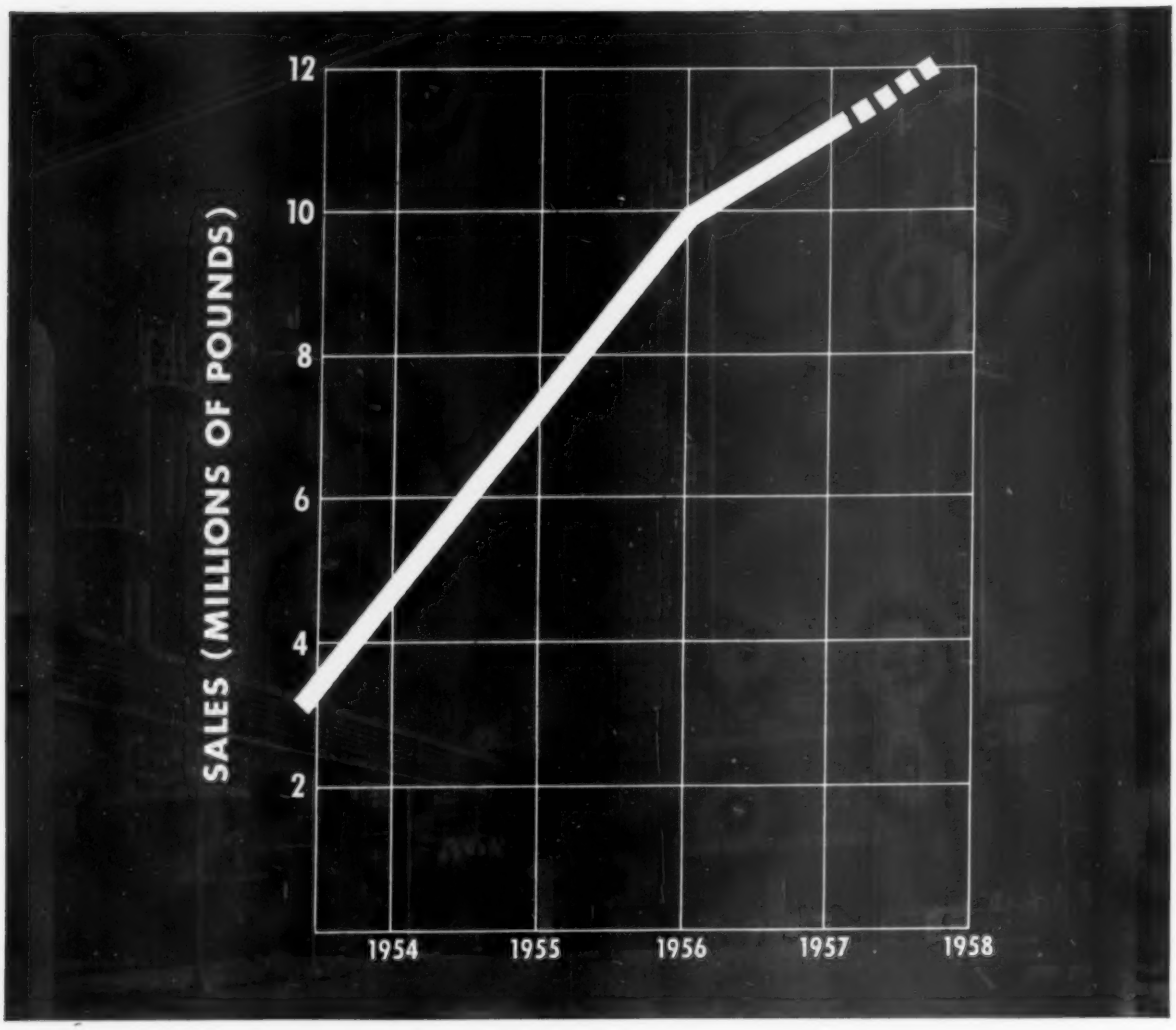

GOVERNMENT FIGURES PROVE AMAZING GROWTH OF DALPAC-TYPE ANTIOXIDANTS

Figures of the U. S. Tariff Commission show the astounding growth of di-tert-butyl-p-cresol in just three years—almost tripled!

Dalpac 4, Hercules di-tert-butyl-p-cresol, has firmly established itself as a leading antioxidant in many industries where hydrocarbon stability is a problem. Petroleum refiners, for example, rely on Dalpac to inhibit gum formation, stabilize gasoline color and prevent engine deposits. They use it in turbine and transformer oils to prevent deterioration. Dalpac 4 has no effect upon electrical properties, which makes it ideal for use in transformer oils.

These are but a few indications of where this Hercules antioxidant can serve you. Since Hercules is a basic integrated producer starting with the raw material, you can count on a dependable source of supply. We will be glad to answer your inquiries and send technical information.

DALPAC® 4

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be called "economical," Cities Service feels that the resulting "good will in the neighborhood" more than makes up for the cost of such equipment.

Ten separate drainage systems collect and segregate the refinery effluents. Some liquid effluent is recovered, while the rest is purified in extensive water treating facilities before being piped to Lake Ontario, 2 mi. away.

Air-pollution prevention also received plenty of attention in the plant's design. A study was made in conjunction with provincial authorities to establish the optimum stack height for pollution prevention.

In addition, special cyclone separators in the cat cracker control catalyst loss.

The Bronte area is primarily a residential one, and Cities Service is anxious to keep its pledge to its neighbors that it will "maintain the highest standards of noise and waste control."

At the same time, the company feels that "good public response will be a natural product of these efforts."

Cities Service decided on the Trafalgar site for its new plant as an ideal location from which to strengthen its position in Eastern Canada.

Like all companies marketing in Eastern Canada, Cities Service is fighting for a big share of what looks like a healthy market for many years to come. Together, Quebec and Ontario already have 60% of Canada's 16-million people. And population growth in these provinces promises to increase demand for petroleum products appreciably in the years ahead. (The two provinces now account for about 55% of the total Canadian petrolem product consumption.)

The St. Lawrence Seaway project, it is felt, will provide additional stimulus to product demand at port cities such as Montreal, Kingston, Hamilton, and Windsor.

Cities Service decided on the Toronto area for several reasons including:

- Availability and cost of crude. The Interprovincial pipeline system brings attractively-priced Western Canadian crude right to the plant's doorstep. And crude can also be delivered by water from other sources if necessary.
- Availability of product transportation and nearness to market. Products pipelines, railroads and highways make movement of products to various Eastern Canadian cities economical.
- Availability of water and power. Lake Ontario water is nearby, and is "excellent" for industrial use. Electric power sources are also handy.

HYCALOG

PRECISION-HYCALOG CHRONOFRAC Patent Pending IS NOW AVAILABLE TO ALL INDUSTRIES AND LABORATORIES

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This sensitive automatic gas analyzer, developed by HYCALOG's researchers, is now manufactured and sold by PRECISION SCIENTIFIC CO., Chicago.

Recommended for any processing operation involving gases, PRECISION-HYCALOG CHRONOFRAC provides continuously repetitive monitoring along with rapid qualitative and quantitative analysis. It is especially valuable in petroleum and chemical plants, research and school laboratories, paint factories, distilleries and food processing plants.

Sales for oilfield and well logging application are handled by HYCALOG; all others by PRECISION SCIENTIFIC.

Write for complete technical information and details on leasing or purchasing.

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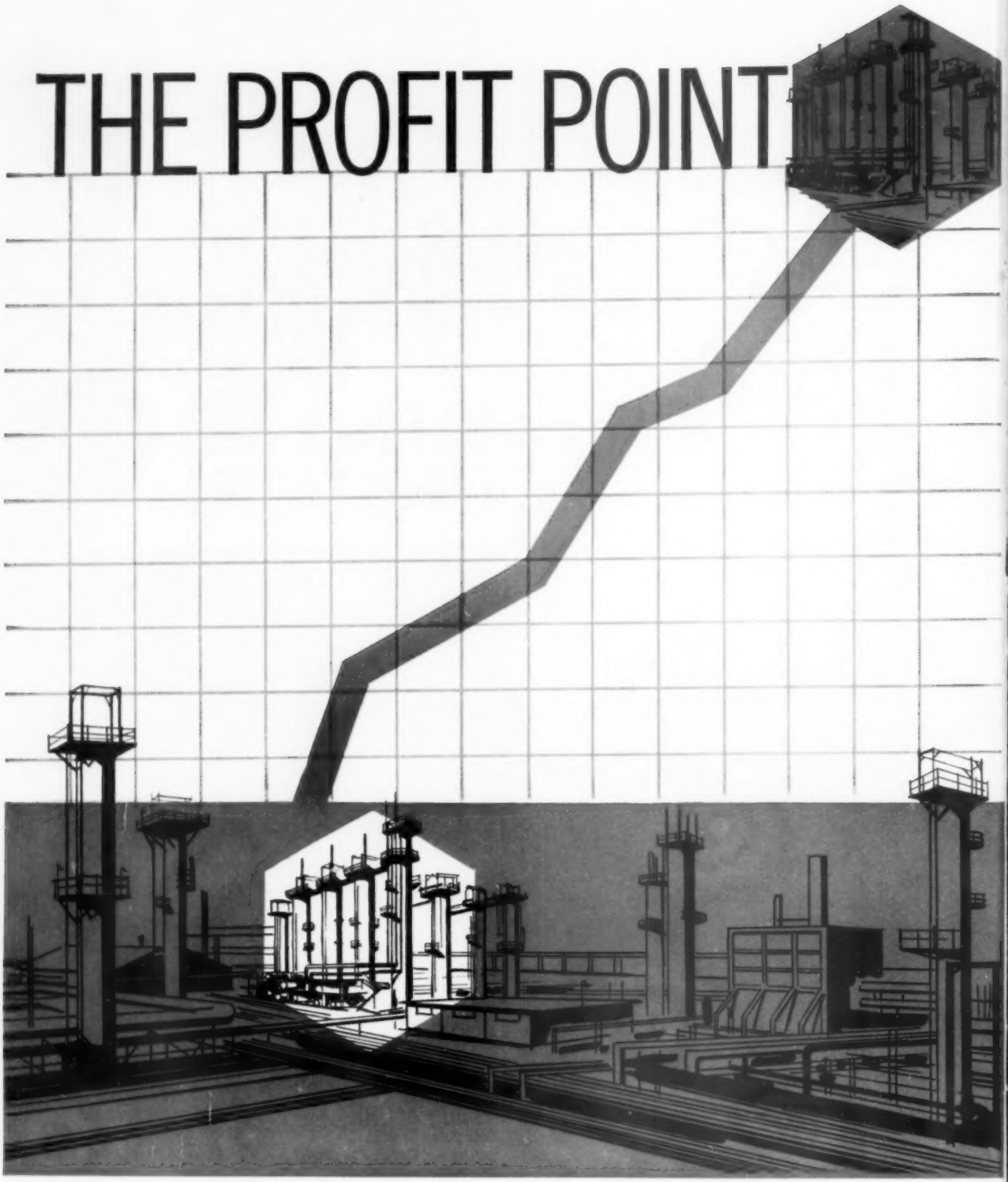

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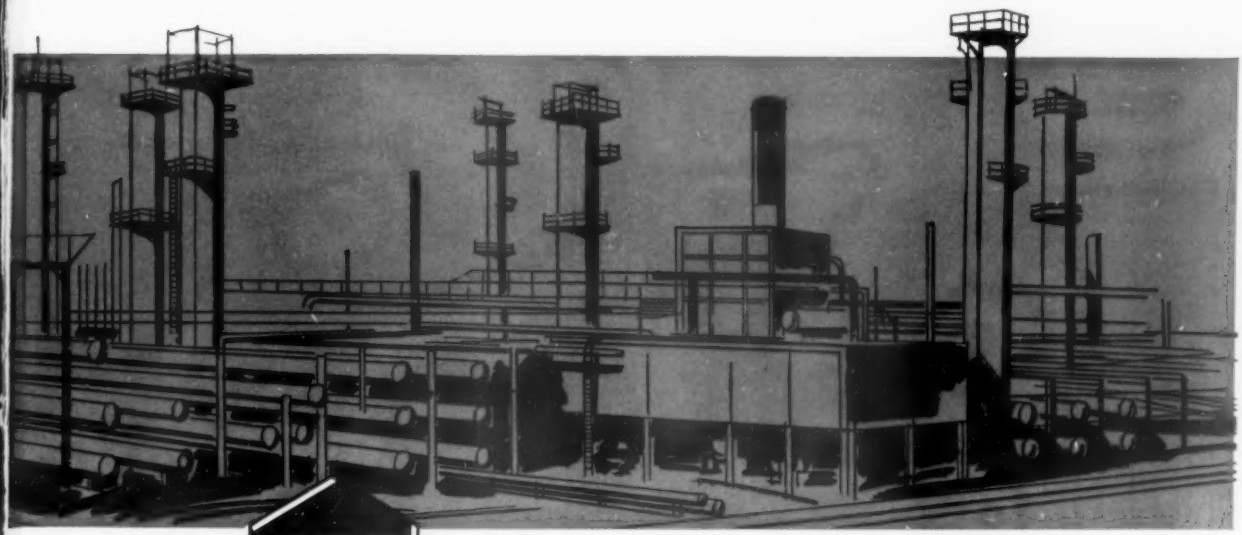
Find out more about the possibilities for your plant. Out of a broad fund of practical experience the UOP Petrochemical Process Department can bring you invaluable aid. In addition to furnishing detailed information on petrochemicals, they undertake special process and marketing studies which show you how to get into petrochemicals with maximum profit potential at minimum risk. Write today!



Technology UOP

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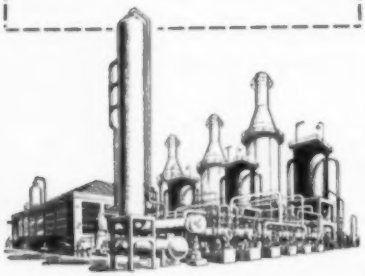

- Proved commercially
- Produces very high octane reformates at same or lower catalyst cost
- Fully regenerable *in situ*
- Rate of catalyst deactivation between regenerations is extremely low
- Can be used in existing reformers

Write for further information.

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What's New / IN PROCESSING

Esso Research & Engineering Co. is one of four companies just picked by the Pentagon to develop solid fuels for "across the board" military purposes.

Esso Research, American Cynanamid Co., Dow Chemical Co., and Minnesota Mining & Mfg. Co., were chosen last week by the Advanced Research Projects Agency from about 30 companies offering to undertake such work.

It's expected that each of the successful bidders will be awarded a contract for between $1-million and $2-million worth of basic research and development work. Production of the solid fuels, however, will be awarded under other contracts.

•

Any regulation to limit the amount of olefins in gasoline would be "nonsensical" acording to the findings of the Air Pollution Foundation, of San Marino, California.

After a year of study of the so-called "less smoggy gasoline" theory (PW—Oct.3'58,p75), Dr. W. L. Faith, managing director of the independent research organization, had this to say:

"There is no pat relationship between the gasoline poured into an auto tank and the exhaust that comes out the tailpipe. . . . There can be no valid reason for bothering to enact a special regulation to limit oelfins in gasoline."

•

Runnels Gas Products Corp. and Texas Gas Exploration Corp. are expanding their jointly owned Eunice (La.) gasoline plant to handle up to 369-million cu. ft. of gas daily.

Fluor Corp., Ltd., has been awarded a $500,000 contract to add about 69-million cf/d to the plant's present processing capacity. Engineering work has been started on the project, and the expansion is scheduled for completion by April, 1959.

•

Process engineers can now get hydrocarbon phase equilibrium data on punched cards for use in computers.

The Natural Gasoline Assn. of America is making the information available on punch cards, "rather than in the usual form of charts and tables," so that process engineers may use computers "to solve their complex and time-consuming problems more quickly."

•

The biggest gasoline plant in Saskatchewan has just gone on stream.

The new plant, built for Steelman Gas, Ltd., a subsidiary of Provo Gas Producers, Ltd., and Dome Exploration (Western), Ltd., is located in the Steelman field, near Estevan, southeastern Saskatchewan. It will process 25-million cu. ft. of gas daily to make gasoline, propane, butane, and elemental sulfur. Ultimate design capacity of the plant is 45-million cf/d. It was built by Refinery Engineering, Ltd.

•

The Bureau of Mines has started negotiations with Fluor Corp., Ltd., for design and construction of a new helium extraction plant in the Keyes natural gas field of Cimarron County, Okla.

Fluor was identified by a bureau aide as one of eight firms on a "select list" of companies listed "in order of their ability to do this job at this particular time." The other firms, selected after bids had been received from 80 companies, were not identified by the bureau.

•

Completion of the Shoats Creek field gas liquids recovery plant and pressure maintenance cycling project near DeQuincy, Beauregard Parish, La., is scheduled for early next month.

Sunray Mid-Continent Oil Co., 92% owner of the project, will operate the plant. Initial gas liquids production will be about 700 b/d. The project is said to be one of Louisiana's most modern gas conservation projects.

•

Union Carbide Plastics Co. will be the new name for Bakelite Co. after Nov. 15.

This is another step in Union Carbide Corp.'s program to link its corporate identity with its various divisions' product lines. Bakelite, a company name for nearly 50 years, will continue in regular use as a trade name for Union Carbide's synthetic resins. President of Union Carbide Plastics will be R. K. Turner.

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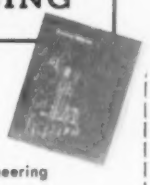

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DEPT/International

What's Behind Red China's Oil Claims?

A wildcat flowing '7-million bbl. daily,' wells 'drilled' with picks, and 'oil' from birch bark and river reeds are just a few claims that perplex Western oil observers.

TOKYO—Communist China's staggering oil-development claims are still pouring out via Radio Peking, the regime's main mouthpiece to the outside world.

Every week, new announcements present whopping claims that perplex Western oil observers. For instance, a seemingly impossible number of new "refineries" are announced.

And then there was the announcement of a single wildcat that flowed "1-million tons per day"—over 7-million b/d—close to half of the entire world's daily production.

The Communist line takes several tacks, but eventually they all boil down to these basic claims:

(1) Prewar estimates of petroleum resources in China were totally false. "The imperialists had assumed that China was poor in oil resources," a recent broadcast said. "But the facts prove exactly the opposite: Of the 9.6-million square kilometers of our land, 2.7-million have underground structures likely to contain oil."

(2) China's petroleum production has burgeoned under Communist tutelage. The number of workers in the petroleum industry has increased 12-fold since 1947, said a recent broadcast. The Chinese Reds also claim to have located a new field—the Tsaidam basin, in the westernmost province of Sinkiang—and to have expanded the Japanese-built synthetic industry of Manchuria and the pre-Communist fields in the Karamai and Yumen basins of northwest China.

(3) The strides forward have been made by harnessing ancient Chinese "traditional" methods—such as the use of "shovels and other simple tools." Here, apparently, is the explanation for some of the figures that have perplexed Western oil observers.

Peking has announced staggering numbers of new "refineries" and "fields" under its First and Second Five-Year plans. But . . .

Take this for an example: "An old man of Uighur nationality in Sinkiang, northwest China, has drilled a shallow oil well with a pick and some other simple tools," a recent broadcast said. "About 1,000 lb. of oil is being extracted from the well every month [that's about 3½ bbl. a month]. Now, using the same method, the people of the township where the oil man lives have dug 30 small oil wells. They have also set up a small oil refinery with the help of the Yumen oil field authorities. They have not only produced enough kerosine and gasoline for local consumption, but they can even supply other areas."

Here are some other recent fantastic claims:

"In Shanghai, members of the Singanet Co-op farm dug two gas wells after a hard battle for three days and nights. With simple equipment they installed three wells, which can be used both for generating electricity and for cooking."

Triumphantly, the Communists conclude that such methods could net the nation 20-million tons of crude annually (about 400,000 b/d).

Nor do the claims stop here:

"People have now developed methods of extracting gasoline and kerosine from coal tar, resin, the chrysalis of silk worms, birch bark, river reeds, and many other things."

"A worker in the No. 2 Petroleum Plant at Faifeng, Honan province, has discovered a kind of river reed called the foxtail, which contains petroleum and has succeeded in extracting gasoline, kerosine, and diesel oil from it. Although the quantity of petroleum that can be produced from this method is not big, . . ."

Have Peking propagandists—or its oil planners—gone mad? No. The answer lies in several general explanations of what is going on in Red China today:

• Petroleum imports from the Soviet Union constitute one of the

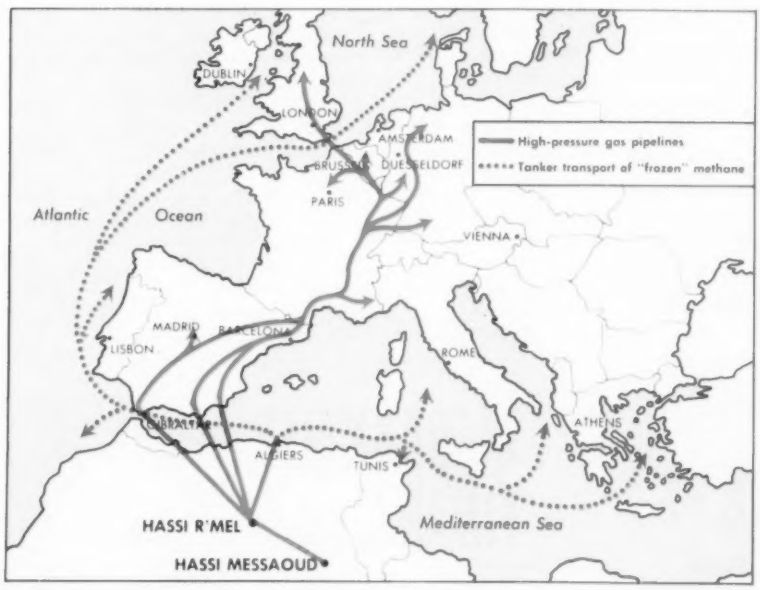
A Bulk Plant Among the Tahitian Palms

California Standard's new bulk plant on the island of Tahiti is now in full-scale operation. Above, the company's J. L. Hanna tanker makes a delivery to the 53,000 bbl. plant. The $500,000 installation includes eight tanks, and a warehouse for greases and TBA products. A pipeline carries products from the wharf to the nearby plant. A French firm, Tahiti Petroles Sarl, operates the plant.

biggest burdens the Chinese regime must bear. They eat up foreign exchange and cut down the Soviet credits and loans that Peking would like to use to import industrial equipment. So no line, no story, is too outrageous if it pushes China's own petroleum production to the fullest.

• **In one of the ironic turnabouts of history, the Peking regime is desperately trying to stop the use of vegetable and animal fats for lighting fuel.** Once, in the early Communist days, the hundreds of thousands of free lamps, which the international oil companies had given to Chinese consumers, were considered symbols of "imperialism." Today, the Reds are trying to restore the use of these kerosine lamps and the use of petroleum products to allow more of the valuable vegetable oils to be exported—again to pay for capital goods imports from the Soviet bloc. That's why "reed juices" are called petroleum, and why every attempt is made to collect substitute lighting fuels.

• **Faced with a 15-million population increase annually, combined with lack of capital, the Reds are falling back on their one great asset—people.** If cheap labor can be used to extract even small amounts of petroleum—no matter what its cost in wasted resources—the Peking planners feel they are better off.



Sahara-Europe Gas Line Proposed

PARIS—European and North African governments are taking a look this week at a $600-million plan to pipe Sahara gas direct to Europe. The plan was unanimously approved by the Consultative Assembly of the Council of Europe last month.

The project, which would be financed by an international company including both governments and private companies, was authored by Maurice Lemaire, French deputy, and vice-president of the Economic Commission of the Council of Europe. He was helped by the French national gas utility, Gaz de France, and pipeline experts who claim the plan is technically feasible.

The French government has not officially endorsed the plan, although it did authorize its submission to the Council.

Government officials say the plan is only one of three methods now under consideration for using the gas.

Another would involve transport by special tankers of "frozen" and liquefied methane.

A third would be to use the gas to produce electricity, which would be transmitted to Europe by cable.

In addition, plans are now being drawn up to establish a steel mill and chemical plants in Algeria, which would be fueled by Hassi R'Mel gas. Wet gas reserves in the field are now estimated at between 500-million and 1-billion cubic meters (about 17½-billion to 35-billion cu. ft.).

The plan proposes construction of a 36-in. to 40-in. high-pressure pipeline system, starting at Hassi Messaoud oil field and possibly winding up in Great Britain (map). The line would first run to the Hassi R'Mel gas field, then up to Algiers or some other point on the coast, and across the Mediterranean or the Straits of Gibraltar to Europe. Then the line would run north through Spain into France, where feeder lines would branch out to Germany, Belgium, Luxembourg, The Netherlands, and possibly England.

Prices for gas delivered to various designations have been sketched by Lemaire. Assuming that Sahara gas at the field would cost 1.50 francs per cubic meter (about 10¢ per 1,000 cu. ft.), Lemaire says a cubic meter of gas will cost 2 francs in Algiers, 4.40 francs in southern France, 5.50 francs in northeastern France, 6.20 in Brussels, and about 6.50 francs (about 43¢ per Mcf) in London.

Shell Joins Caltex Oil Hunt Down Under

Royal Dutch Shell is reentering exploration in Australia. This time, it joins Caltex in its Western Australia search, as a new partner in Wapet (West Australia Petroleum Pty.).

Under an agreement announced last week, ownership of Wapet is being readjusted to give 2/7 interests each to Shell, a subsidiary of Standard of California, a subsidiary of Texaco, and 1/7 to Ampol Exploration, an Australian firm.

Shell drilled one deep test in Queensland several years ago, but has had no Australian exploration interests since then.

Wapet is the most active of the companies seeking still-elusive commercial oil in the country. It holds almost 300,000 sq. mi. in Western Australia, where it has spent almost $31½-million in finding a noncommercial well at Rough Range in 1953 and drilling 57 dry holes, totaling 200,000 ft.

Prospects of finding oil have recently been brightened by Wapet's two new oil shows in Western Australia—the first in five years.

The new shows were encountered in the No. 1 Meda and No. 1 Goldwyer wildcats, drilled about 200 mi. apart in the Kimberleys.

Wapet has drawn up an extensive testing program for further evaluation of the two tests, and will use specialized acidizing equipment for the first time. The shows occurred above 6,710 ft. at Meda, and between 2,900 and 4,000 ft. at Goldwyer. The former was carried to total depth of 8,809 ft., the latter to 4,574 ft.

What's New / AROUND THE WORLD

MOROCCO—Marine work on the offshore area of the new Italian concession is now being started by Western Geophysical Co., of Los Angeles.

The marine crew will be working the coastal waters included in the 10,000-sq. mi. Tarfaya concession, the first granted under Morocco's new oil law. It went to Italy's state-owned Agip Mineraria under a 50% partnership with the Moroccan government (PW—Aug.1'58,p71).

•

PERU—Texas Petroleum Co.'s fourth wildcat in the jungles of Eastern Peru has been abandoned as a dry hole, like the first three.

The test was carried to 7,591 ft. by Santa Fe Drilling Co. near the Huallaga River town of Yurimaguas. Texpet now plans additional geophysical work.

•

ARGENTINA—Union Oil Co. of California disclosed last week that its new oil exploration contract gives it the option to repurchase production in excess of Argentina's requirements.

Otherwise, Argentina is obligated to buy all the oil produced over a maximum 27-year period, at prices related to world markets. Union says it is to spend $5-million within two to five years on exploration of 4-million acres on the west side of the oil-producing Comodoro Rivadavia basin.

•

NIGERIA—The deepest test in Nigeria to date has been abandoned as a dry hole at 13,100 ft.

The test, at Ethiope, Delta province, was the third drilled in the western region by a Shell-British Petroleum company. The rig is being moved to a fourth location, in Benin province.

In the eastern region, where commercial production has already been established, the company's three latest exploratory tests have all found oil and are now being tested.

One is at Uquo, 70 mi. east of Port Harcourt, another 10 mi. east of the port, and the third 15 mi. southwest in the heart of the delta swamps.

•

BOLIVIA—The Bolivian government oil company is starting exploration on its assigned share of the Bolivian-Brazilian treaty acreage.

Aerial photography is being started on Area "A" for Yacimientos Petroliferos Fiscales Bolivianos, by Andean Geoservices. Area "B" was assigned for development by private Brazilian interests, whose applications are under study by Brazil's Economic Development Bank (PW—Oct.3'58,p72).

•

FRANCE—Paris Basin oil prospects are further improved by discovery of oil in a third area.

The new find was made at Chailly, 40 mi. southwest of Paris, by the government-controlled Cie d'Exploration Petroliere. CEP said last week that the wildcat produced 38 bbl. of good-quality oil on 8-hour test from 5,469-74 ft. The first Paris Basin oil field has been established by a French independent 25 mi. north of Paris. A Caltex affiliate has also hit oil, 70 mi. south of Paris.

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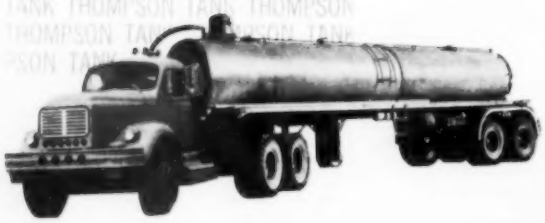

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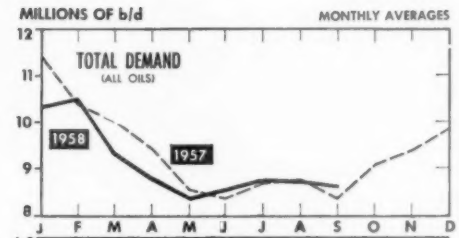
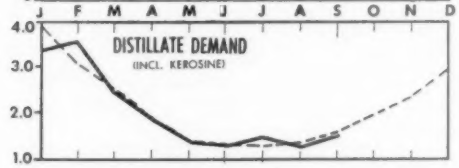
PETROLEUM WEEK'S

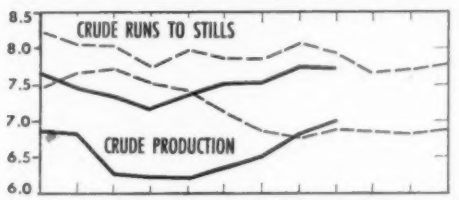
Fingertip Figures



TOTAL DEMAND
Latest 4-week average *
Year ago 9.053

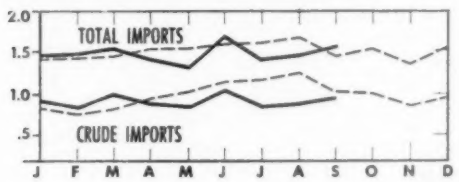


DISTILLATE DEMAND
Latest 4-week average *
Year ago 1.956



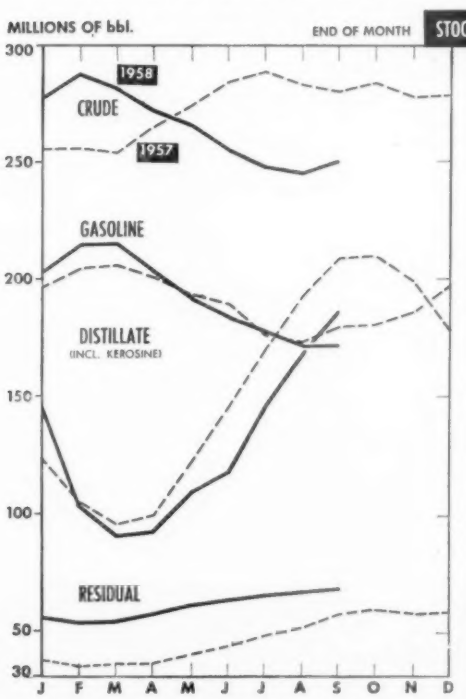
RUNS TO STILLS
Latest week *
Previous week 7.753
Year ago 7.580

CRUDE PRODUCTION
Latest week *
Previous week 6.919
Year ago 6.712



TOTAL IMPORTS
Latest week *
Previous week 1.426
Year ago 1.586

CRUDE IMPORTS
Latest week *
Previous week .782
Year ago 1.044



CRUDE STOCKS
Week-ended 10-25 255.0
Previous week 254.0
Year ago 282.4

GASOLINE
Latest week *
Previous week 168.4
Year ago 181.4

DISTILLATES
Latest week *
Previous week 195.8
Year ago 209.1

RESIDUAL
Latest week *
Previous week 67.9
Year ago 59.3

Crude inventories since the end of September have increased 5-million bbl., nearly all of which consists of stocks of Texas origin.

Nationwide crude inventories total 255-million bbl., of which 217-million bbl. are east of the Rockies.

By many comparisons, the over-all crude inventory position is not high. But the fact remains that crude prices in many major producing areas have been trimmed, and still appear to be weak.

The build-up in crude inventories occurred during a month in which domestic production registered a slight decline, and one in which demand has been relatively strong.

Based on incomplete figures, indications are that demand in October ran well above September, and also ahead of October, 1957.

But refinery runs during October were below the September rate, as refiners reduced product inventories.

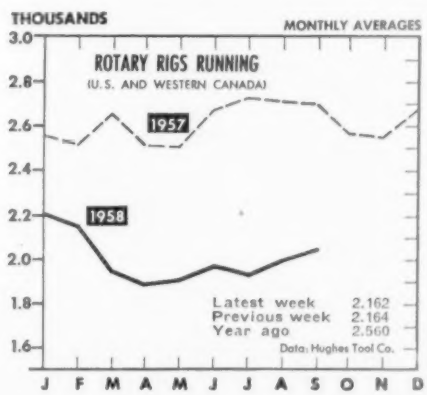
The increase in crude stocks during October appears to be the result of a higher-than-necessary rate of new supply —both domestic production and imports —during September.

In fact, the rise in October was a continuation of an expansion in crude stocks that started in mid-September. Crude inventories at the end of September were 5-million bbl. higher than on Aug. 31.

While many economists predict a strong demand for the last two months of the year, the industry's inventory position is not yet improved to the point where big increases can be made in the rate of new supply.

* * *

*Due to the Election Day holiday, most figures for the Oct. 31 week were unavailable at press time.



The Market Trend

The Center of Gravity Is Moving East

The products to watch this week are kerosine and turbine fuels at the Persian Gulf. Whether these prices move or don't move will unfold an interesting story.

Historically, all signs say that kerosine and jet fuel prices ought to advance at the Persian Gulf. It has been over two weeks now since kerosine prices advanced 0.25¢ at the U. S. Gulf. It has been well over a week since kerosine and jet fuel prices posted similar gains in the Caribbean. The weight of tradition alone would seem to dictate price hikes for these products at the big refineries at Abadan, Bahrein, and Ras Tanura.

But here's the new twist: If Persian Gulf sellers do not advance, then a full break with product-pricing patterns in the U. S. Gulf and Caribbean seems in the making. And a Persian Gulf refinery market on a self-determining basis would be something new to be reckoned with in world trade.

A strong start in this splinter trend was made last month when Persian Gulf sellers refused to reduce gasoline prices after U. S. Gulf and Caribbean prices had fallen 0.5¢ a gal. in late September. Refinery runs had been cut severely in the Persian Gulf because of a fuel oil surplus. Gasoline, as a result, was in tight supply. So why reduce?

If self-government takes over in Persian Gulf product prices, it will make for a much less formalized pricing set-up in world trade. This development will be a delight for brokers, arbitrageurs, and marginal buyers. It will be the despair of anybody trying to guess what happens next in oil.

It's obvious, too, that the center of gravity for oil is moving eastward. Years ago, the world used to take its price cue from the U. S. Gulf. There was a time when buyers in the Persian Gulf used to pay the "high" of U. S. Gulf prices if the shipment went to India and Southeast Asia, and the "low" if to the Mediterranean. More recently, Caribbean prices have nosed out U. S. Gulf prices in importance, but the crown sits uneasily.

This month, Persian Gulf fuel oil starts to land in the New York harbor area on a regular basis. U. S. Gulf and Caribbean sellers will ignore this flow as long as they can—as long as the quantities are small. But the weight of supplies—bar war and crisis—leans increasingly toward the East.

Killing The Goose:

Spot tanker rates are falling this week as more and more vessels compete for assignments. This shows up in world lay-up figures—only 292 tankers out of service this week as against 359 three months ago.

Good News For a Change:

Quite a few firm spots are showing up in oil prices at home. Low-sulfur fuel oil is positively strong in the Mid-Continent. Distillate prices are pointing upward in the Northeast. Get rid of one or two weak sellers of gasoline, and the Gulf Coast market would be ready for a dramatic off-season increase.

Low-Lead Gasoline:

Shell Caribbean was the apparent low bidder to supply the military with 5.4-million gal. of 83/90-octane low-lead gasoline. Shell's bid was 8.49¢ a gal., f.o.b. the Caribbean. The lowest U. S. bid was by Suntide at 9.75¢, f.o.b. the Gulf.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of November 3

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....11.75-12.75
- Gasoline, 92 oct reg....10.5-11.5
- Kerosine....9.125
- Heating oil, No. 2....8.625-9
- Gas oil, 48-52 d.i....8.875-9.5
- Fuel oil, bunker "C"....$2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130....16
- Gasoline, 93 oct research prem....10.75
- Gasoline, 87 oct research reg....9.875
- Gasoline, 79 oct research....9.125
- Gasoline, 70-72 oct motor method....9
- Kerosine....9.375
- Heating oil, No. 2....8.625
- Gas oil, 48-52 d.i....8.875
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- **Kerosine....10.2†**
- **Heating oil, No. 2....9.7†**
- Fuel oil, No. 6....$2.37-2.45

Okla-Group 3, northern shpt., bulk
- Gasoline, 89 oct reg....11.625-12.375
- Kerosine....10-10.5
- Heating oil, No. 2....9-9.5
- **Fuel oil, No. 6....$1.50†**

Chicago, bulk
- Gasoline, 91 oct reg....11.25
- Heating oil, No. 2....9.5-11.35
- Fuel oil, No. 6 high sulfur....6.9-7

Los Angeles, rack
- Gasoline, 88 oct reg....12.25-13.6
- Diesel fuel, PS 200....10-11.25
- Light fuel, PS 300....$2.80
- Heavy fuel, PS 400....$2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....5

Pennsylvania Lubes
- Bright stock, 25 p.t....22
- 200 vis. neutral, 25 p.t....21

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i....23-24
- Neutral, solvent, 200-210 vis....19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v. i....24
- Neutral, solvent, 200 vis....20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130....17.25
- Gasoline, 79 oct research....10.375
- Kerosine....10.375
- Gas oil, 48 d. i. minimum....10.25

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9....2.83-3.07
- North Dakota, 36.0-36.9....2.62-3.07
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00-3.07
  - West Texas, N. M., inter., 36.0-36.9....3.00
  - West Texas, N. M., sour, 32.0-32.9....2.86
  - East Texas, flat....3.25
  - Mirando, 28.0-28.9....3.31
- Illinois Basin, flat....3.00
- Pennsylvania Grade, Bradford dist., flat....3.90
- California, Signal Hill, 21.0-21.9....2.50†
- North Louisiana-Arkansas, 36.0-36.9....2.82-3.02
- Wyoming, sweet, 36.0-36.9....2.90-3.00
- Wyoming, sour, 32.0-32.9....2.71

Canada (flat prices, at the well)
- Acheson-Stony Plain (Alta.)....2.61
- Leduc-Woodbend (Alta.)....2.67
- Redwater (Alta.)....2.56
- Daly (Man.)....2.39
- Smiley (Sask.)....2.33

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 48.0-48.9, Tucupido....3.75
- San Joaquin, 41.0-41.9, Puerto la Cruz....3.34
- Oficina, 35.0-35.9, Puerto la Cruz....3.05
- Tia Juana, Medium, 26.0-26.9, Amuay....2.55
- Bachaquero, flat, Las Piedras....1.78-1.93
- Tarra, 38.0-38.9, San Lorenzo....3.08
- Lagunillas Heavy, flat, Cardon....2.10

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....2.08
- Safaniya, 27.0-27.9, Ras Tanura....1.65
- Iran, 34.0-34.9, Bandar Mashur....2.04
- Iran, 34.0-34.9, Abadan....1.99
- Iraq, 35.0-35.9, Fao....1.98
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.85
- Qatar, 41.0-41.9, Umm Said....2.23
- Neutral Zone, Burgham, 23.5-24.4, Mina Saud....1.61
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud....1.43

Middle East, Eastern Mediterranean
- Arabian, 36.0-36.9, Sidon....2.49
- Iraqi, 36.0 36.9, Tripoli, Banias....2.49

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, 37-38....2.75

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- **U.S. Gulf-New York, clean..(USMC —11%) $2.54↓**
- U.S. Gulf-New York, dirty....(USMC —10%) $2.57
- **NWI-USNH, dirty....(USMC —60%) $1.08↓**
- NWI-UK/Cont., dirty....(Scale —50%) 16/3*
- Persian Gulf-UK/Cont., dirty...(Scale —50%) 30/10*
- **Persian Gulf-USNH, dirty..(USMC —60%) $5.08↓**

**Sterling.*

Ads Talk Octane, but Who's Racing?

Gasoline ads show increasing emphasis on octanes. But, so far, there seems to be little reflection of a 'race' in the actual octane ratings.

The octane pitch is sounding somewhat louder as gasoline advertising makes another run for the money.

Gasoline advertising campaigns are getting a second wind, as the interim fall drives get under way. Most ad managers aren't talking much about plans beyond the end of the year, however. Management is still locking the doors on all-day budget meetings. For most, this means keeping the '59 plans under wraps until the money is allocated.

If fall ads are any sample of what's to come, however, octane and additive claims will be bouncing back and forth even more in the months ahead.

There are enough octane claims in today's ads to provide some semblance of a "verbal octane race"—whether or not refineries are boosting octanes.

National octane averages have climbed less than one octane number over the past year, according to industry surveys (page 113). Most observers have felt that octane increases would continue at a slow pace in the next few years. With the auto industry putting more emphasis on economy, others have gone along with this prediction (ads for some of the '59 cars are pitched on the theme that "it runs on regular grade gasoline").

Tidewater Oil Co.—with its new Delaware refinery and its beefed-up Avon (Calif.) refinery—made it clear last spring, however, that it wasn't going to push octane into the background. Tidewater's challenge to an octane race (PW—May16'58,p62) was met with silence for several months. But here's a sample of current advertising—not exactly "quiet" on octanes:

- Richfield Oil Corp. has an extensive campaign on the West Coast promoting its "100-plus-Boron" gasoline. Until Richfield launched this campaign, Tidewater had been the only West Coast marketer advertising gasoline over the 100-octane mark.
- Time Oil Co., West Coast independent, is marketing a "100-plus-octane" superpremium, Time-100, supplied by U.S. Oil & Refining Co., Tacoma, Wash.
- Crown Central Petroleum Corp. has a radio blitz going in the New York-New Jersey area, advertising its Crown gasoline as "the highest-octane gasoline."
- Speedway Petroleum, Michigan independent, this week boosted its premium to 100-octane and, without a price increase, is guaranteeing money back if the new gasoline knocks "in any car, no matter what year, model, or make."
- Tidewater continues its "highest-octane" campaign, but is concentrating on point-of-sale and dealer merchandising for the rest of the year.

There seems to be no rush to force the issue of who actually does have the highest octane, as long as the octane advertising chalks up more sales.

Though Richfield doesn't use the words "highest octane," this could be implied. Dealer promotion reads, "Extra now . . . 100-plus Boron Super Octane Richfield Gasoline . . . and still champ throughout the West."

Tidewater and Richfield ads refer to "the most modern refinery" and "America's most advanced refinery" respectively.

A Tidewater sales official in the Eastern Division said last week: "The challenge still stands—we have the highest-octane premium and regular gasolines, and we can prove it." Commenting on the effectiveness of Tidewater's octane campaign, he added, "The campaign is still producing a favorable increase in sales."

Some companies are steering clear of all octane and additive claims.

Photoelectricity: New Lube Sales Tool

A new instrument called the Fotoscope Oil Condition Tester is being used at selected Socony Mobil stations to promote lube oil sales. The Fotoscope, developed by Mobil engineers, measures solid contaminants in crankcase oil.

A tiny sample of crankcase oil from the dipstick is placed in the Fotoscope, where a light beam is picked up by a photoelectric cell to measure fuel soot, oxidized materials, dust, and metal particles. This activates a scale indicator that registers "safe," "doubtful," or "change." The instrument does not measure acid content or water and fuel dilution in the crankcase oil.

Socony feels that the driveway test will provide a powerful sales argument, and that it will help to counteract conflicting recommendations for oil-change intervals. The instrument will be available to all Mobil dealers by next March.

Socony Mobil's "New Car Gasoline" campaign, for instance, turned thumbs down on all superlatives in gasoline ads.

Instead of talking octane or additives, Socony pegs its advertising on the Mobilgas Economy Run and other performance tests.

"We believe the cross-fire talk about chemical additives and octane ratings tends to confuse the motorist," says J. D. Elgin, Socony ad manager. "While we have made significant improvements in our gasoline for 1959, we do not intend to stress technical points in our ad copy."

Other majors—on both the East and West Coasts—are hanging on to their tradition of playing down octane ratings.

The space-age theme may steal some scenes, however, if the trend in that direction continues.

Marketers of the Boron gasolines latched on to the tie-in with the age of missiles more than a year ago.

D-X Sunray, with its Boron gasoline and motor oils, is splashing drawings of Talos-type missiles in newspapers and on billboards. A half-page space-age color ad hit the Oct. 20 issue of Life Magazine.

This theme was emphasized again a couple of weeks ago with the introduction of "Rocket-Age Lionite," a new additive in gasolines marketed by Lion Oil Co., a division of Monsanto Chemical Co.

Whatever the "message," the radio blitz is apparently proving to be an effective medium.

A report listing the top users of spot radio time includes The Texas Co., Sinclair Refining Co., Shell Oil Co., Sun Oil Co., Cities Service Co., Continental Oil Co., Esso Standard Oil Co., and Standard Oil Co. (Ind.).

Independents also are using more spot radio time.

Sinclair is still hitting the air waves with about 12,000 spots weekly, with the safety theme: "Drive with care, and use Sinclair Power-X." This campaign is slated to continue until the end of the year, and possibly longer.

A new twist in a spot radio ad by Esso is being aimed at the highly competitive New Jersey market. The spots tell listeners about a nonpetroleum item that is being sold at a discount at "many Esso stations in New Jersey."

The spring campaigns are the ones to watch, some observers are now saying. A big octane push on the West Coast might force another showdown on the multigrade issue.

"Time Oil, with its superpremium, might be just a little too close for comfort," comments one eastern marketing official.

Earlier speculation by West Coast majors about the multigrade issue substantiate this possibility (PW—Aug. 1'58,p76). Several companies have indicated that, if anyone were to hit the West Coast with three grades in a big way, the blending-at-the-pump method of marketing might win their votes—in spite of a staunch two-grade position.

What's New / IN MARKETING

Pennsylvania Marketers Try Fair Trade Again

Fair trade pricing of gasoline was revived in Pennsylvania this week, in a move initiated by Sinclair Refining Co. Atlantic Refining Co.—the last marketer to abandon Pennsylvania fair trade some 18 months ago—joined Sinclair. At press time, others were expected to follow.

Both companies notified dealers of the establishment of a minimum fair-trade price for regular at 19.9¢ per gal., ex taxes. Sinclair announced that the premium price would be 4¢ a gal. above regular.

The last try at gasoline fair trading in the state was in June, 1956, when eight majors followed Atlantic's move. Five majors refrained from fair trade, however, and the attempt died in April, 1957 (PW—Apr.19'58,p46), after Sinclair's initial move to drop fair trade (PW—Mar.29'58,p51). Atlantic later tried using "suggested" retail prices.

•

The teamster-oil deadlock in Chicago was finally broken last week with union acceptance of a 10¢ hourly wage increase. The wage boost has been the chief stumbling block to negotiations, which have been stalemated since early summer (PW—Aug.15'58,p46). The truck drivers' union originally demanded a 25¢ hourly increase, while management maintained that no increase was possible. Other details of the new contract were still unsettled early this week.

•

Erie Meter Systems, Inc., supplier of petroleum pumping equipment, has been purchased by A. O. Smith Corp., of Milwaukee. Erie Meter's Erie (Pa.) plant will be taken over by Smith before the first of the year and the plant's 200 employees retained. No purchase price was reported, but Erie officials described the Smith offer as "so attractive we couldn't pass it up." Expansions and additions of new lines are planned for the Erie plant.

•

Premium gasoline octane ratings climbed 0.1 in October, while regular was unchanged. National weighted octanes were 98.7 for premium and 91.4 for regular, according to Ethyl Corp.'s latest survey. Compared to the year-ago ratings, premium was up 0.6 and regular was up 0.5. Of the 57 cities surveyed, 15 reported premium averages of 99-octane or higher. Superpremiums sampled showed an octane range of 100.2 to 102.6.

•

Socony Mobil Oil Co. will go ahead with its national guidebook series, to be sold by Mobil dealers to build station traffic. Next $1 Mobil Guide will cover New England and New York State, including New York City.

The first in the series, covering five Southwestern states (PW—Jul.18'58, p80), was "very successful" in building traffic at Magnolia outlets, according to Mobil officials.

Simon & Schuster, which publishes the guides for Socony, is already compiling material for the Northeast guide. The guides rate hotels, motels, and restaurants, and give sightseeing tips.

About 85% of the initial printing on the Southwest guidebook was sold in the first six months. This supply was slated to last a year.

Magnolia also reports good response from "Mobil Guide" promotions. For instance, a direct mailing to new-car owners—offering a free copy of the guide if the motorist came in for a tank fill-up within two weeks—got a 13% response.

DEPT/Personals

JOHN D. FENNEBRESQUE has been elected president and chief executive officer of Texas Butadiene & Chemical Corp., Houston. Fennebresque, formerly executive vice-president and a director of Food Machinery & Chemical Corp., has also become a director and a member of Texas Butadiene's executive committee. Fennebresque succeeds **E. L. Green, Jr.**, vice-president of Cabot Carbon Co., and manager of its oil and gas division, who will remain with Texas Butadiene as a director and member of the executive committee.

G. Simpson

J. D. Fennebresque

GORDON SIMPSON, General American Oil Co. of Texas, Dallas, was reelected president of the Independent Petroleum Assn. of America, at the association's annual meeting in Dallas. Newly elected members of IPAA's executive committee are: **Eugene T. Adair**, Texas Pacific Coal & Oil Co., Ft. Worth; **C. Richard Collins**, Mt. Vernon, Ill.; **J. L. Dougan**, Salt Lake City; **H. B. Gernert**, Casper, Wyo.; **C. J. Paine**, Paine Drilling Co., Dallas; **P. W. Pitzer, Jr.**, Breckenridge, Tex.; **Roland V. Rodman**, Anderson-Prichard Oil Corp., Oklahoma City; **Robert C. Tucker**, Great Western Drilling Co., Midland; and **Frank W. Winegar**, Denver.

M. DARWIN QUIGLEY, geophysical engineer, is in charge of Horizon Oil & Gas Co.'s new Rocky Mountain division exploration offices in Salt Lake City. Quigley has been associated with Utah Southern Oil Co., Salt Lake City, Price Exploration, Bartlesville, Okla., and Sinclair Oil & Gas Co., Salt Lake City.

F. M. RIDER has been appointed to the newly created staff position of assistant to the director of marketing of Lion Oil Co., El Dorado, Ark. **Lyle D. Sullivan** succeeds Rider as manager of station sales. Sullivan was formerly assistant manager of the southern division for D-X Sunray Oil Co. in Tulsa.

FRANK LINDEMAN, JR., has been elected executive vice-president of United Producing Co., Charleston, W. Va., gas and oil subsidiary of United Carbon Co. Lindeman joined United Carbon last August; before that he was production vice-president and a director of Pan American Petroleum Corp. **H. E. Norrick**, associated with United Carbon since 1925, has been elected senior vice-president of United Producing. Two other United Producing vice-presidents elected at the same time are: **John M. Capito**, Appalachian area gas and oil operations manager, and **Cramon Stanton**, manager of exploration.

HARRY D. GASARCH has been elected comptroller of Mobil Overseas Oil Co., Socony Mobil Oil Co. affiliate. Gasarch is also assistant comptroller of Socony Mobil. In his new position, Gasarch succeeds **E. J. Glocke**, who has been granted a leave of absence pending retirement. Gasarch became head of the comptroller's foreign department of Socony Mobil in 1953, and became assistant comptroller two years later.

P. S. P. FELL has been appointed New York representative, and **R. C. ARNOLD**, South American representative, of Gulf Oil Corp.'s crude oil department. Fell has been New York representative of the foreign crude oil sales department since he joined the company in 1956. Previous to that, he was manager of export and bunker sales for Union Oil Co. of California. Arnold, with Gulf since 1922, was most recently foreign crude oil sales department representative in Rio de Janeiro, where he continues to be located.

J. C. DONNELL II, president of Ohio Oil Co., Findlay, Ohio, has been awarded an honorary degree of Doctor of Humane Letters from Defiance College, Defiance, Ohio.

HAYLETT O'NEILL has become purchasing agent for Humble Oil & Refining Co., in Houston. He succeeds **Francis T. Fendley**, who retires after 39 years with Humble. O'Neill, with Humble since 1934, has been assistant purchasing agent since 1955.

H. O'Neill

E. P. Shanahan

E. P. SHANAHAN has been named vice-president and comptroller of Houston Corp., New York, and of its natural gas pipeline subsidiaries, Houston Texas Gas & Oil Corp. and Coastal Transmission Corp. He has been associated with Price Waterhouse & Co., certified public accountants, since 1940.

STANLEY D. BREITWEISER, vice-president of D-X Sunray Oil Co., Tulsa, was elected president of the new Oklahoma Petroleum Council for a two year term, on Oct. 21. **F. C. Fellingham**, Pan American Petroleum Corp., Oklahoma City, was elected vice-president, and **James O. Kemm**, executive manager of OPC, was elected secretary-treasurer. OPC handles activities formerly conducted by the American Petroleum Institute's Oil Information Committee.

M. H. MORRIS has been appointed assistant superintendent of Frontier Refining Co.'s manufacturing facilities at Cheyenne, Wyo. Morris has been chief chemist and assistant superintendent for Delta Refining Co. at Memphis since 1942.

R. B. Gustafson, Jr.

H. R. Kamb

R. B. GUSTAFSON, JR., has been named assistant chief geologist, and **HUGO R. KAMB** senior staff geologist for foreign exploration, for Delhi-Taylor Oil Corp., Dallas. Gustafson, formerly a senior staff geologist, will supervise all district exploration supervisors in the United States, and will assist **Norman C. Miller**, chief geologist, in the technical phases of foreign exploration. Kamb, formerly a senior staff geologist, will be responsible for evaluating foreign exploration situations.

CHARLES HAY has been appointed president of Royalite Oil Co., Ltd., Calgary. Hay became vice-president and a director of the company in 1955, and in 1956 was appointed executive vice-president. **J. W. Whitaker** has been appointed secretary of Royalite, and **D. J. Morrison** treasurer. Whitaker has been assistant secretary since 1954, and Morrison assistant treasurer since 1951. **Roland L. Thompson**, operations manager of Royalite, has been appointed a director, succeeding **C. U. Daniels**, who has retired.

H. M. McCLURE, JR., Alma, Mich., was elected president of the National Stripper Well Assn. for a second term, at the association's recent meeting in Dallas. **William Shoemaker**, Bradford, Pa., and **Morris Seydell**, Wichita Falls, Tex., were reelected vice-presidents of NSWA.

OWENS A. DUNNAHOO has been named vice-president of Wilshire Oil Co. of California, in Los Angeles. In addition to his duties as treasurer of Wilshire, Dunnahoo will be responsible for the supervision of personnel, purchasing, and credit functions, and for the coordination of company policies between departments. **W. W. Niceley**, formerly chief accountant, succeeds Dunnahoo as controller, and will assume all accounting responsibilities.

Bob Cleland, Standard sales representative (left), and I. G. Smallegan, plant manager.

Would you like to be a salesman?

Do you enjoy the thrill of selling against strong competition? Would you like to be in a field where opportunities are limitless? Many of America's most successful executives started as salesmen. They rose to their present heights because the bedrock of American business is competition and the bedrock of competition is selling. At Standard Oil, salesmen are given a sound background. They spend weeks as salaried sales trainees, learning the methods of successful selling.

Dr. Omar Juveland, chemist in Standard's laboratories at Whiting, Indiana.

Would you like to be a scientist?

Here is a field of constantly increasing importance, offering endless opportunities. In the last 10 years alone, Standard Oil Company and affiliates have added or rebuilt 20 laboratories. And the number of scientists has been more than doubled. Standard scientists are widely known for inventions and discoveries that have benefited car owners, industry and national oil conservation. They often help on scientific projects of highest importance to national security, such as atomic research.

If you had your choice now,

WHAT KIND OF CAREER WOULD YOU LIKE?

Nugent T. Brasher (left) and Dearal W. Beddo, geologists for Pan American Petroleum Corporation, a Standard affiliate.

Would you like to be an explorer?

The search for oil is one that never ends. And with the world depending more and more on oil, the search goes on at an ever-increasing tempo on land and sea with complicated and costly equipment. Work such as this makes for exciting, adventurous careers at Standard Oil and its affiliated companies. And it is work that provides an extra measure of satisfaction, for it is of utmost importance to the future of our country.

L. Van Paris Jr., Standard Oil dealer at South Bend, Indiana.

Would you like to be in business for yourself?

Do you like the idea of being an independent businessman? If you do, the service station business offers great opportunities. Many Standard Oil dealers, for example, not only are successful businessmen, but are civic leaders, too, serving as mayors, city councilmen and in other capacities. They will tell you that being in business for yourself provides personal satisfaction and financial rewards seldom equalled in other endeavors.

What makes a company a good citizen?

One measure is a company's progressiveness, its ability to change and grow, to adapt itself to new and better methods. The result is better service and better products for customers. And in such a growing, progressive company, there is opportunity for employees to advance. We at Standard Oil are proud of the fact that most of our officers and directors, since this company started, have come up through the ranks.

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STANDARD

THE SIGN OF PROGRESS... THROUGH RESEARCH

WILLIAM I. SPENCER, vice-president of the First National City Bank of New York, has been assigned general supervision of the bank's petroleum department. He succeeds **J. Edward Warren**, who has joined Cities Service Co. as chairman of the executive committee and a director. Spencer will direct the activities of a group of petroleum engineers, geologists, and lending officers who render financial counsel on oil.

W. I. Spencer

R. D. Ford

R. D. FORD has been named president of Schlumberger Surenco, S.A., with headquarters in Caracas, Venezuela. Ford has been executive vice-president of Schlumberger in Caracas, since 1952. He joined Schlumberger in 1936, and has been assistant area manager in California, assistant area manager for the Gulf Coast, and manager of the Mid-Continent area.

JERE. J. BRESNAHAN has been elected vice-president in charge of sales of Crosby Valve & Gage Co., Wrentham, Mass. Bresnahan has been manager of sales of safety relief valves and pressure indicating gauges since 1941.

H. B. (Pat) HURLEY has joined Welex, Inc., as assistant to **Ray O. Shaffer**, Welex president. Hurley was most recently senior vice-president of Republic Natural Gas Co., with offices in Dallas. In his new position, Hurley will be located in Houston.

HAROLD A. KEIT is associate manager of the data processing and controls department in the engineering division of Thompson-Ramo-Wooldridge Products Co., Los Angeles, jointly owned by Ramo-Wooldridge Corp., Los Angeles, and Thompson Products, Inc., Cleveland. Keit joined Ramo-Wooldridge in 1957, and Thompson-Ramo-Wooldridge shortly after.

JAY B. WILLIAMS has been appointed manager of a new Denver branch office, opened by Clark Bros. Co. on Nov. 1. Williams was formerly assistant manager at Clark's Tulsa office.

RICHARD LADD is in charge of the new Mid-Continent zone, and **R. J. (Bob) ADAMSON** of the new Rocky Mountain zone, for Milwhite Mud Sales Co. Ladd, with headquarters in Tulsa, will supervise the sales and service of Milwhite products in Kansas, Oklahoma, North Texas, West Texas, and New Mexico. Adamson's zone will service the area from the Four Corners up to the Canadian Rockies, from headquarters in Denver.

LOGAN T. JOHNSTON, executive vice-president of Armco Steel Corp., Middletown, Ohio, has been elected to the board of directors of that company. Armco is the parent of National Supply Co. Johnston joined Armco in 1925, as a salesman, and in 1947, was made sales manager. In 1952, he was elected a vice-president, with responsibility for Armco's sales.

LOUIS G. HELMICK, JR., executive vice-president of Joy Mfg. Co., Pittsburgh, was elected a director of that company, on Oct. 28. Helmick has been Joy's executive vice-president since 1948. Prior to that time, he served as vice-president and general manager of Joy's industrial division.

WILLIAM M. FREEMAN was appointed manager of Chicago Bridge & Iron Co.'s process equipment sales group, with headquarters in New York. Freeman has been a member of CB&I's sales department in New York since 1951. **Antonio Nelson de Abreu Cervone** was named sales representative for Chicago Bridge Construcoes, Ltd., CB&I's Brazilian subsidiary. He has been with the Brazilian company since 1957.

DONALD F. WISHART has become engineering manager of Stone & Webster N.V., recently formed Netherlands subsidiary of Stone & Webster Engineering Corp. Wishart has been chief project engineer of Stone & Webster's chemical division in Boston, since 1948.

PHILIP A. ROTH has been elected a director of U.S. Industries, Inc., New York. Roth is chairman of the executive committee, executive vice-president, and a director of General Industrial Enterprises, Inc., New York. He is also chairman of the executive committee, vice-president and a director of Baldwin Securities Corp. U.S. Industries' activities include the manufacture of products for metal fabricating, for oil and gas transmission, and for oil field production.

ROBERT LAWRENCE, JR., has been appointed sales manager for metallurgical and process industries for M. W. Kellogg Co., New York. Lawrence will be in charge of sales of a new process for converting iron ore to sponge iron, which replaces pig iron in steel production.

R. Lawrence, Jr.

G. D. Doremus

GEORGE D. DOREMUS has been elected vice-president in charge of manufacturing for George E. Failing Co., Enid, Okla. Doremus joined the company earlier this year as works manager.

JAMES A. DAYTON has joined American Meter Co., Philadelphia, as vice-president of manufacturing. Dayton is in charge of the manufacturing, methods and tooling, engineering, and industrial relations departments. Before joining American Meter, Dayton served as executive vice-president, secretary, and a director of Turner & Seymour Mfg. Co., Torrington, Conn.

AMONG GUESTS at the October meeting of New York Chapter of Nomads were these 13. Front row, left to right: **J. A. Davidson**, Caterpillar Tractor Co.; **H. R. Walton**, Fisher Governor Co., Ltd., London; **J. Gleason**, Caltex Services, Ltd., London; **G. W. Walton**, Ideco, Dallas; and **R. S. Stephens**, Mene Grande, Venezuela. Guests in back row, left to right, are: **E. Ragan**, Creole Petroleum Corp.; **P. D. Collins**, London; **Bob Thompson**, East West Oil Tools C.A.; **E. Frias Rocha**, Maquip, Brazil; **G. Wilbur**, Ideco, Dallas; **Ben West**, U. S. Steel International, Brazil; **A. Thomas**, Maracaibo, Venezuela; and **J. Guillermo Ramirez**, Airetool Mfg. Co., Cuba.

JACK M. SLOUGH and **JAMES G. DeFLON** have formed the new cooling tower engineering firm of Slough-DeFlon, with headquarters in San Marino, Calif. Slough has been in charge of the research and development department of Fluor Corp.'s manufacturing division. Later, he was manager of Fluor's wood products division, and also vice-president and general manager of Santa Fe Tank & Tower Co., a Fluor subsidiary. DeFlon was formerly manager of engineering and development for Fluor Products Corp. Previous to that, he was chief engineer for Santa Fe Tank & Tower.

GEORGE L. O'CONNOR has been appointed to a newly created post for the promotion and sale of gas turbines in the eastern half of the United States, for Clark Bros. Co., Olean, N.Y., one of the Dresser Industries. O'Connor has been an equipment engineer for Lummus Co., in Houston.

CHARLES W. WILKINS III is market manager for laboratory and test instrumentation for the Brown Instruments Division of Minneapolis-Honeywell Regulator Co., in Philadelphia. He joined Honeywell in 1955 and, previous to that, was an instrumentation test engineer for Pratt & Whitney.

GLEN TABLEMAN has been appointed manager of W-K-M Valve Co. (Britain), Ltd., London, a division of ACF Industries. He was formerly general sales manager of the W-K-M division in Missouri City, Tex.

L. C. GRAVES has been promoted to special representative of subsurface equipment for Bethlehem Supply Co., with offices in Tulsa. He was formerly in charge of subsurface equipment sales for Bethlehem's Gulf Coast division, at Houston. Before that, he was manager of the company's store in that city. In his new position, Graves will be responsible for the sales of the company's subsurface pumps and sucker rods in all areas where Bethlehem has local stores.

L. C. Graves

J. T. Teed

J. T. (Jack) TEED was appointed market manager for petroleum industry instrumentation for the Brown Instruments Division of Minneapolis-Honeywell Regulator Co., in Tulsa. Teed, with M-H since 1950, was most recently eastern sales supervisor of systems engineering, also in Tulsa.

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Atlanta 3 — Douglas C. Billian, 1301 Rhodes-Haverty Bldg., Jackson 3-6951

Boston 6 — Donald R. Thompson, 350 Park Square Bldg., Hubbard 2-7160

Chicago 11 — Edward A. Callahan Jr., 520 North Michigan Avenue, Mohawk 4-5800

Cleveland 15 — J. E. MacArthur, 1164 Illuminating Bldg., 55 Public Square, Superior 1-7000

Denver 2 — J. W. Patten, Mile High Center 1740 Broadway, Alpine 5-2981

Houston 25 — D. O. Hanson, 724 Prudential Bldg., Jackson 6-1281

Los Angeles 17 — Peter S. Carberry, 1125 W. Sixth St., Huntley 2-5450

New York 36 — Donald R. Thompson, 500 Fifth Ave., Oxford 5-5959

Philadelphia 3 — W. A. Potter, 6 Penn Center Plaza, Rittenhouse 6-0670

San Francisco 4 — William C. Woolston, 68 Post Street, Douglas 2-4600

Tulsa 3 — J. A. Hartley, 909 Enterprise Bldg., 522 South Boston, Gibson 7-5594

England, London E. C. 4 — E. E. Schirmer, McGraw-Hill Co., Ltd., 95 Farrington St.

Out in Left Field?

IT'S HARDLY NEWS TO OIL MANAGEMENT that an industry needs to modernize continuously to stay alive in today's era of rapid technological change. The petroleum industry has long taken pride in its ability to move ahead with the times.

Nevertheless, it is apparent from Petroleum Week's PLAN '59 survey (pages 35 through 87) that some managements are *underestimating the speed* with which the oil industry is being transformed. Unit sizes are doubling overnight. Unit costs are shrinking to the tiniest fractions. The speed of change is getting hard to handle. There is more obsolescence than some companies like to talk about.

This raises the issue of how fast a company should modernize, keeping in mind the financial hazard of trying to grow too fast. One obvious answer: Modernize at least as fast as the competition—faster if possible.

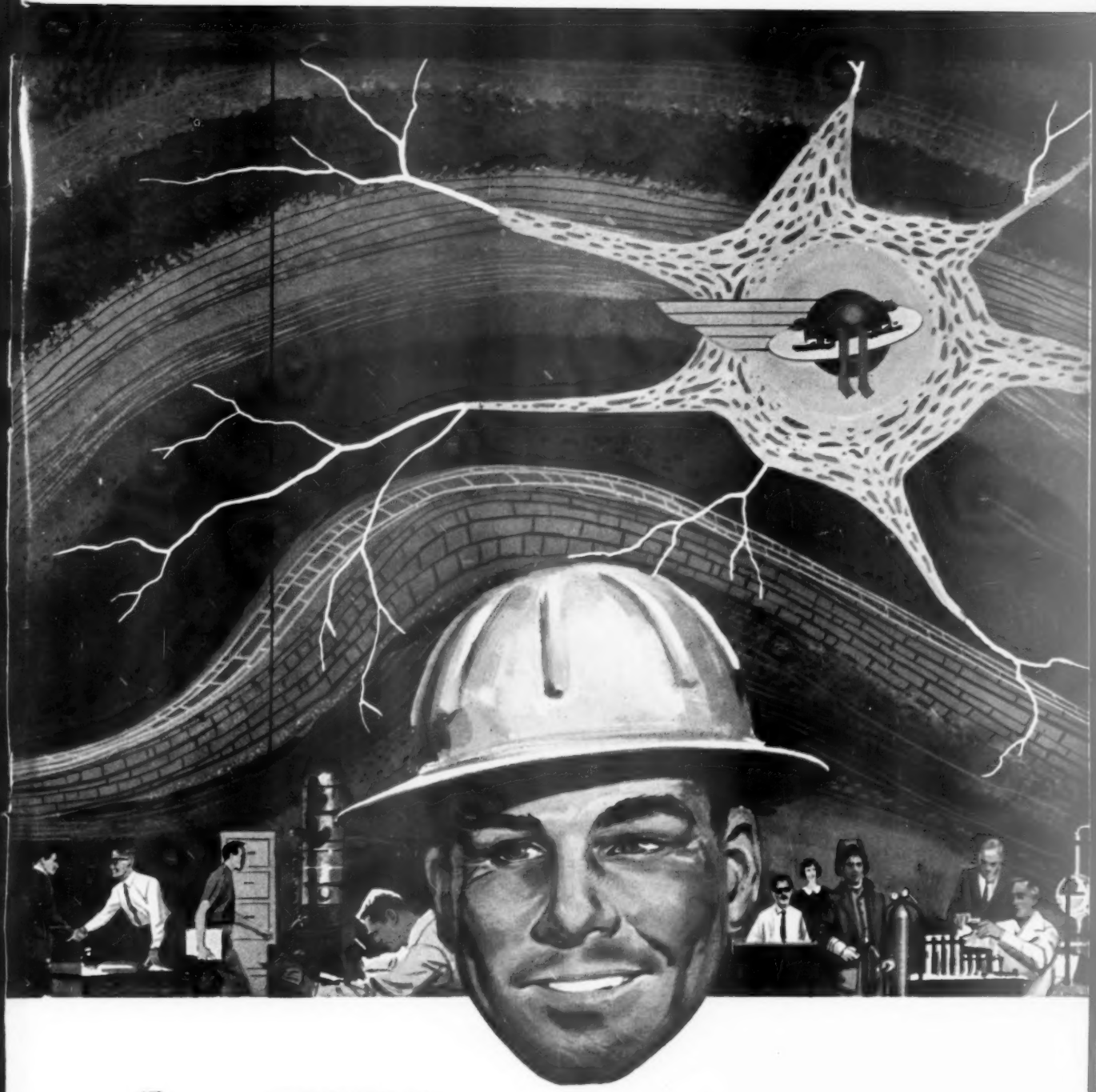
Top executives around the industry, in big and small companies, might as well face the fact that a few of the fastest-moving companies are starting to leave daylight beween themselves and their competitors—daylight that wasn't there five years ago. These are the companies that keep running through such checklists as this:

Are we ahead of competition in . . .

Rigs that drill fast and deep, with few breakdowns? ☐ Slimhole equipment for saving on shallower holes? ☐ Automation in producing operations? ☐ Refineries giving high octanes at lowest cost? ☐ Size and efficiency of pipelines, trucks, and tankers? ☐ Stations rating well in appearance and service? ☐ Electronics for accounting and problem-solving? ☐ Sound planning of how to invest dollars? ☐ Best use of men's time and talents? ☐

OBVIOUSLY THE QUESTIONS CHANGE with a company's type of operation. But the principle doesn't. And although the actual planning of modernization can involve very complex calculations, competition always keeps the basic question simple:

If Company Y rates behind Company Z on such a modernization check-list, and makes no drive to catch up, where is that going to leave Company Y in the years ahead?



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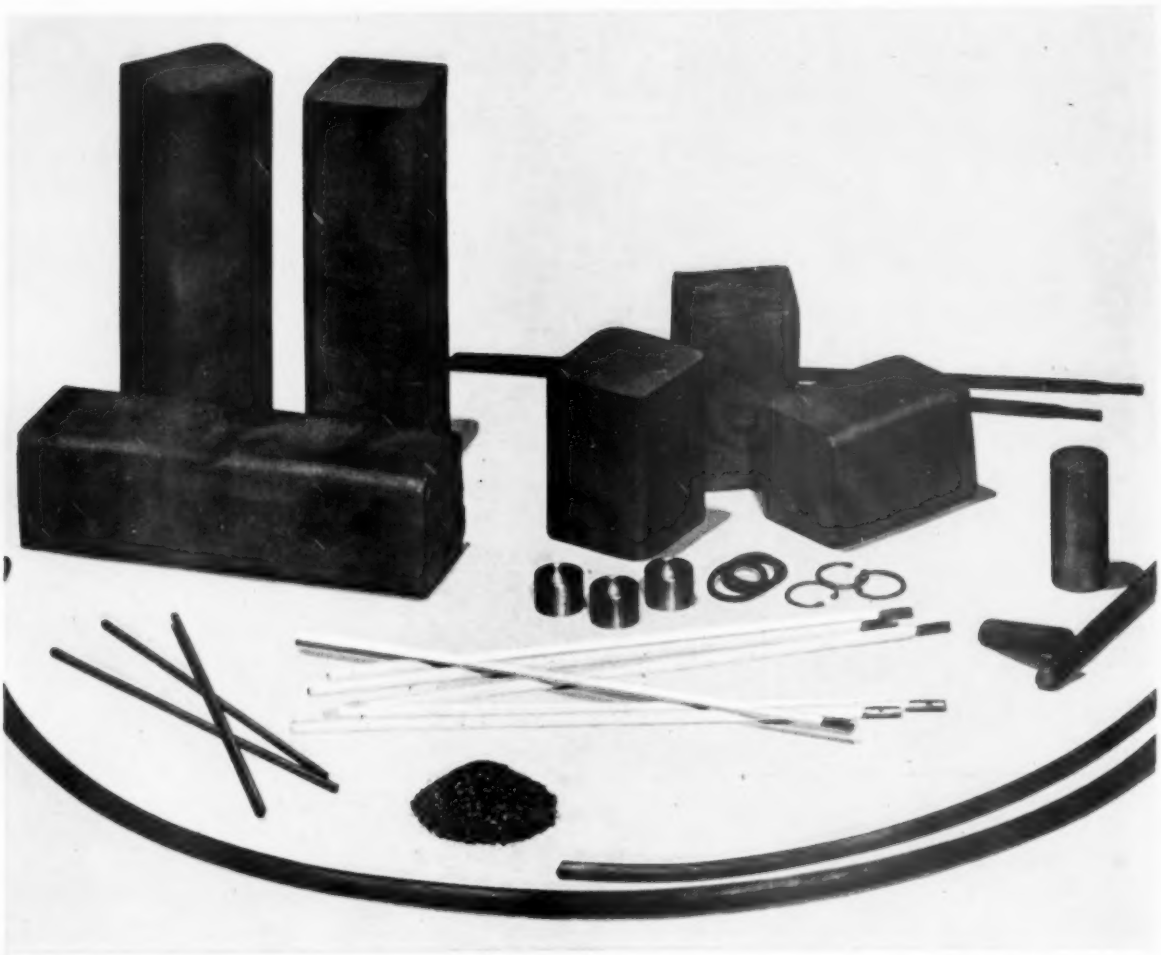

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